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SELECT COMMITTEE ON THE ENVIRONMENT

ORGANIZATION

THURSDAY, JANUARY 29, 1987



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Marland, M. (Mississauga South PC)
McGuigan, J. F. (Kent-Elgin L)
Miller, G. I. (Haldimand-Norfolk L)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitution:

Shymko, Y. R. (High Park-Swansea PC) for Mr. Eves

Clerk: Decker, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

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LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, January 29, 1987

The committee met at 4 p.m. in room 151.

ORGANIZATION

Mr. Chairman: Good afternoon. Welcome to the inaugural organizational meeting of the select committee on the environment. The terms of reference of the committee when it was established earlier this week referred back to the initial setup of the committee, so I understand from the clerk that I do not have to submit my name for nomination and election as chairman. That may be just as well, because I probably would not be elected.

The first order of business we need to involve ourselves in is the election of a vice-chairman.

Mr. G. I. Miller: I would like to nominate the member for Kent-Elgin (Mr. McGuigan) as vice-chairman.

Mr. Chairman: Thank you, Mr. Miller. Are there any other nominations? Hearing none, all in favour? Congratulations, Mr. McGuigan.

I took the liberty of asking David Neufeld from the legislative research office to be with us today. The committee should consider that we do have support staff, and I ask you to consider that we appoint Mr. Neufeld as our researcher. That is moved by Ms. Fish. All in favour?

Motion agreed to.

Mr. Chairman: Welcome, Mr. Neufeld.

We have to move a motion with respect to the transcript of our committee hearings. I understand that Mr. South is going to do the honours.

Mr. South moves that unless otherwise ordered, a transcript of all our committee hearings be made. All in favour?

Motion agreed to.

Mr. Chairman: We have had terms of reference referred to us. I do not want to take an awful lot of time today, but certainly the committee will have to provide some guidance to the chair on what our focus should be, within what terms of reference and how we are going to proceed to our objective.

I would like to have a discussion this afternoon with respect to that. If we can come to some resolution, fine. If there are things we cannot come to resolution on, perhaps we can strike a subcommittee and it can be empowered to meet and report back. We have some time before the House rises and we could have another meeting, if it is necessary.

We did have an unofficial meeting to which all parties were invited. The third party members were not able to be there, but I believe they have some idea of the proceedings. That was simply because of the number of committees

that want to sit during the break, an attempt to get our dibs in first. I suspect no committee will be able to sit longer than four weeks.

We wanted to give the whips some idea of the dates we would like to sit. We have forwarded a request to them. Of course, it will then be up to the whips to decide whether they will favour us with that, and the committee may decide to change that. We have requested the three weeks preceding the March break and the week beginning April 13 for a wrapup of the committee's deliberations. I want to bring that to the attention of those who were not perhaps aware of it.

If I could open it up to the committee, I would like to have a discussion of where we should be headed and how we do that.

Ms. Fish: I hope that we are not, despite your wish, going to be discussing today, even in a preliminary way, the meat to be put on the bones of the terms of reference. I hope that for the following very simply reason: This meeting was called at relatively short notice, well understood because of the pressures of the House.

As a consequence of that and as a consequence of changes in membership on the select committee, a motion having been put forward through the House mere minutes ago, there is the circumstance where the members who will be permanently attached to the committee are unable to be here. I for one have, and others may have, long-standing commitments which are currently backing up in an effort to accommodate this organizational meeting.

As an alternative, I propose we set a second date for us to meet in the fairly near future when we might ask representatives of each of the parties to bring forward their proposals for specific items to be dealt with in the context of the terms of reference.

I am not suggesting very much of a delay. If other members are agreeable, we might even meet a week from today. I am concerned that there be an opportunity for adequate notice for all involved to be able to have a discussion which would even preliminarily shape the direction we would go in to define what those bilateral issues are.

Mr. Chairman: Ms. Fish, recognizing that the full committee should meet again in a week's time, would you agree to a subcommittee being struck to come to a consensus to bring to the committee or would you prefer to just have that committee meeting? If we do the latter, my fear is that we will have a full discussion a week from today and then have to have another meeting subsequent to that, if we do not have the ability to have a discussion among the three parties.

Ms. Fish: To try to introduce a note of scheduling realism into the wish to proceed, the committee dealing with the terms of reference would doubtless involve the respective critics who would be dealing with the matter of questions. As critic for my party, I would want to be involved in the work of a steering committee or subcommittee preparing that, so I do not see that we are terribly far ahead in the light of requirements for other legislation for which I am responsible which will hold me up in committee in the House in the early part of the week.

I was trying to be helpful in a spirit of co-operation rather than getting into a lengthy debate about the problems of very short notice and so forth when we have been waiting nearly two years for this kind of a meeting.

Mr. Chairman: Ms. Fish, I am sure there are at least a couple of people in the room, perhaps more, who have been waiting an awfully long time for this to actually come to fruition; no one more than I, however.

Mrs. Grier: There are a couple of points which need to be made. One is that we have been waiting a long time for the committee to begin its work. I am reluctant to see the initial weeks of that work bogged down in a discussion of what the work is going to be, that is, the terms of reference. I felt there was likely to be fairly general agreement that the most important priority for the committee would be the examination of Countdown Acid Rain.

Given what you have said about the fairly short time available in the break, or the likelihood of merely having four weeks, would it be possible to agree very quickly that this is the first thing we are going to do, if that is how other members feel? Then we can begin to establish the schedule of witnesses and what we will need for that to occur during the break. Perhaps the discussion of the terms of reference and the direction the committee wants to go in the future could happen concurrently.

I am reluctant to postpone getting some information to the whips about the times and dates we want to meet, because I have a horrible feeling that a lot of things are going to be finalized in the next week or so. We may find ourselves with times which are not long enough to accomplish what I think is the very important priority, that is, examination of the acid rain program.

Mr. Chairman: I am at the wishes of the committee as to how we proceed and whether we come to our focus sooner or later. We have to do so at some point. It is true that the longer we take to do that, the shorter period of time we are going to have to put together a list of people we want to appear before us.

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Mr. G. I. Miller: Ms. Fish, are you saying that four weeks is too long and does not fit into your schedule?

Ms. Fish: No. I do not understand why a fairly simple proposal seems to have created such a fuss. I had very limited notice of this meeting and, therefore, I asked that there be another meeting scheduled with adequate notice so that we can get on to the issue of substance as distinct from procedure, which is what we will deal with and in what order.

On the question of procedure, that is to say, giving an estimate of dates we would like to have authorization to sit, it seems that can proceed quickly. As the chairman indicated, the information about the proposed hearing schedule was conveyed to me and my colleagues. It was a very full hearing schedule. I would be very pleased to see us go away from today suggesting to the whips that we would like the authority to sit on those days.

If there is any benefit to getting that element of the scheduling in early, then we have done so, but the particular items to be dealt with under the bilateral issues surely could have the benefit of a proper discussion, longer than I feel is possible to do today in any serious way, given the problems of notice and the difficulty other members have had in being here.

Speaking from my perspective and that of my colleagues, we are content to support the recommendations on a hearing schedule for the request to the whips which deals with that element of the problem. We also recognize the

terms of reference which have been adopted. I am simply asking for a second meeting of the committee to put the meat on the bones of those terms of reference.

I am suggesting that we do so with dispatch. I should not think that a simple week would be a problem since the committee cannot begin to meet until the House rises. We would still have enough time to direct the clerk as to the legislative research.

Mr. G. I. Miller: I do not think we are delaying it at all. We are one week forward and as expeditious as possible. I suggest a steering committee could draw up a schedule for us with a spokesman from each party.

I want to indicate that four weeks is a lot of time between when this House is completed--and I am not sure when it is going to be completed--I think we need a little breathing time in between now and the spring session. We have to keep that in mind. We have had a long year and while we want to deal adequately with the acid rain and the environmental issues, a steering committee can accomplish that and decide on when we should be moving ahead.

Mr. Chairman: Do any other committee members wish to engage in the discussion?

Mrs. Grier: I move that we ask the whips for a four-week schedule during the break proposed to be the weeks of February 23, March 2, March 9 and April 13. Let us at least see whether we can get that nailed down.

Mr. Chairman: Is there any discussion on that, or is everyone in agreement that the motion carry?

Mr. G. I. Miller: Is that not going to be done by a steering committee? Do you want a steering committee of this committee to establish the direction in which we want to go?

Mrs. Grier: There are two issues, Mr. Chairman. There is the issue of establishing the time when the committee wants to meet and there is the concern Ms. Fish has raised about the terms of reference.

I have indicated that my position on the terms of reference is that the acid rain problem is the one which has to be dealt with first, but I have no objection to agreeing today to the schedule we want and postponing the discussion on what we are going to do during that said schedule to a further meeting if that is what Ms. Fish wants.

Mr. Shymko: What are the dates again?

Mrs. Grier: The weeks of February 23, March 2 and March 9. Those are the first three weeks immediately following the anticipated break and then the week of April 13 which, in our preliminary discussion, the chairman had indicated would be a week when we could wrap up a report or a finalization, assuming we had some hearings during the first three weeks.

Mr. Chairman: That week in April is a short week, in any event. The motion has been put. All in favour?

Motion agreed to.

Mr. Chairman: In the matter of the focus of the committee or putting

the meat on the bones, it appears it may be appropriate for the committee to meet one week hence. Are there any thoughts on there being a meeting--and I recognize it may be difficult--of the critics, a member of the government and me between now and then to have some discussion in that regard? In other words, striking a subcommittee.

Ms. Fish: If you are talking about a meeting of the critics, since I was the one who raised a concern on scheduling, I assume by implication that remark is directed to me. There is no problem in principle, if the issue is going to be to identify the time. I hope the upshot of proposals will be that we will have consensus with the committee on what we want to do and how we order our business. I did not anticipate a lengthy discussion and, therefore, I felt it might be just as simple to do it within the forum of the committee, if we had a proper committee meeting time.

It seems, Mr. Chairman, that even your Liberal colleagues have commitments they must meet today. I am sure with proper notice we can have a discussion that would carry on for a bit and solve the issues there rather than necessitating two separate meetings.

Mr. Chairman: Certainly there is no question, Ms. Fish, because of the short notice to your members and indeed to others, that it is inappropriate today. With the indication that it is a matter that perhaps can be deliberated upon at a full committee hearing without too lengthy a discussion, I myself had no problem suggesting that we discontinue our discussion of the agenda or the focus of the committee right now and meet again next week, if that is agreeable to everybody.

Ms. Fish: Is there anything we must do to have leave from the House to meet again?

Mr. Chairman: Yes, we will have to. I will instruct the clerk to request the House leaders' approval.

Ms. Fish moves that the select committee on the environment meet next week.

Mrs. Grier: Mr. Chairman, do you intend to deal with the motion about the weeks that we require today or postpone that until later?

Ms. Fish: We have done that.

Mr. Chairman: We have already moved that. That will be forwarded on as an official request from the committee.

Is everyone in favour of Ms. Fish's motion?

Motion agreed to.

Mr. Chairman: We will now request of the House leaders that we sit again next Thursday.

The other items that we needed to discuss, we will leave until next week, matters of budget, etc. That will depend upon our decisions as to where we are headed.

Is there anything else the committee should decide or discuss today? If not, the committee stands adjourned.

The committee adjourned at 4:18 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ORGANIZATION

THURSDAY, FEBRUARY 5, 1987



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: McGuigan, J. F. (Kent-Elgin L)

Charlton, B. A. (Hamilton Mountain NDP)

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Fish, S. A. (St. George PC)

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Marland, M. (Mississauga South PC)

Miller, G. I. (Haldimand-Norfolk L)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitution:

Smith, D. W. (Lambton L) for Mr. Poirier

Clerk: Decker, T.

Clerk pro tem: Mellor, L.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, February 5, 1987

The committee met at 3:22 p.m. in committee room 2.

ORGANIZATION

Mr. Chairman: We have a couple of substitutions today, not the least of which is our clerk, Lynn Mellor, who, by special request, is sitting in for Todd Decker, who is enjoying the security of the standing committee on resources development meeting today.

Last week we discussed, on a preliminary basis, what our agenda for the break should be. Today I would like to finalize that. Another item we have to deal with is the adoption of a budget, depending upon how we agree to handle our allotted days. Although it is not official, I understand that the days we requested of the House leaders appear on the draft master schedule. I hope they will be given final approval. Therefore, that is the three weeks just before the March break or the weeks of February 23, March 2 and March 9 and the short week of April 13, which is short because Good Friday is in it.

To lay the foundation, I am not advocating this number of days, but we have a maximum of 15 days. We thought we would reserve that short week for a wrapup of the committee's findings. That will give David Neufeld some time to put together a draft for us. We would then have three weeks and, therefore, a maximum of 15 sitting days. As I say, I do not advocate a full five-day week. That is the number of days we have. Now we have to decide what to do.

Having laid that groundwork, I will open it to the committee.

Mrs. Grier: One comment on that: Ms. Fish had mentioned to you her concern about that last week, which is shortened by Good Friday on one end and Passover on the other. It is a very short week. I do not know whether that is a problem. As she is not here, I thought I would mention it.

Mr. Chairman: It is something that has to be taken into consideration in setting out our schedule. I think our researcher will be able to give us more information as to whether he will be able to put together a draft report in the interval between the week before March break and April 14. We will have to decide whether, in those three days, we will be able to review that draft and any subsequent drafts, if there are any, so that we will have something to present to the House.

If we do not completely finish it that particular week, although I hope we will, we should keep in mind that we could probably secure permission to have a final meeting once we return. That is a good point, Mrs. Grier. We should keep in mind that it will probably be three days that week.

Mrs. Grier: Do you want to discuss what we do in those 15 days?

Mr. Chairman: Yes. Actually, I would prefer it if you left it to the chair and I will just sit down and put together what I think will be an appropriate agenda, and everyone would--

Interjection.

Mr. Chairman: In the interests of democracy, I am interested in hearing what the committee would like.

Mrs. Grier: It seemed from our preliminary discussion last week that there were two choices: either to interpret our terms of reference in such a way as to cover a whole range of transboundary issues from the Great Lakes to the St. Clair River to toxic rain, as you had suggested, or just to pick out very narrowly what I see as our first task, which is examination of the Countdown Acid Rain program. We are now about to receive the second set of six monthly reports from Ontario Hydro, Inco, Falconbridge and whoever on that. I see that as a very important priority, given the fairly short time we are going to be sitting.

I have no difficulty if the committee wants to have a much broader task before it, as long as there is recognition that that task is the most important and first one and may well occupy all the time that is available to us in this first session. That is my position, Mr. Chairman.

Mrs. Marland: I am equally interested in the subject area that Mrs. Grier has just referred to, but I think that Mrs. Grier and I share another area of great concern: that is, the pollution of the Great Lakes, since the southern boundaries of both our ridings take up quite a number of miles of the north shore of Lake Ontario. In fact, her boundary runs concurrent after mine.

I have just read a description of the agreement that was signed yesterday by Canada and the United States, and Ontario and New York state in particular. In mentioning Mrs. Grier's riding of Lakeshore, I would also mention Mr. Partington's riding, because he would have quite a bit of lakeshore of Lake Ontario as well.

As a select committee on the environment, my interest would be get beyond the technicality of a paper agreement that has been signed. There have been agreements in the past signed by all those bordering the Great Lakes, but we have never had a solution. We have ongoing agreements and great pronouncements. I would like this committee to get to the bottom of what specific thrusts will be made by the participants to those agreements to eliminate ultimately, in the long term, but to reduce in the short term, the problem of the pollution of the Great Lakes.

1530

Recognizing that our federal partners have the same commitment and involvement, I think it is very important for us to find out whether these agreements are just words; and if they are just words, whether two, three or five or 10 years from now a committee like ours will just be sitting here discussing the same problems, which will then have been accelerated to a more serious degree, or whether we will have the pleasure and privilege of passing on to our descendants a problem that is being addressed and reduced. I would be interested to know whether you, Mr. Chairman, think that kind of investigation of exactly what those solutions are to the problem of the Great Lakes is within the purview of this committee.

Mr. Chairman: Mrs. Marland, I appreciate your asking me that because it gives me an opportunity to make my feelings known without pre-empting any of the other members.

There are many areas and issues that this committee can be looking into that affect the province as far as environmental issues are concerned. I am not sure if all members of the committee have received a copy of a letter that was sent to us by the Canadian Environmental Law Association. Some of us have, but I think the committee should have. I have given a copy to our researcher. Perhaps he could have it copied for everybody.

They have suggested--and I do not think they are unique in this--that there are several areas, not the least of which is the acid rain question and the Great Lakes water quality, but also the Niagara River toxic management and other issues.

It would be nice if this committee had been given its terms of reference some time earlier so that we could at this point have addressed several of these issues. However, that is not the way it is. Now we are faced with a situation where we have only three weeks of hearings--as I said, 15 sitting days--and I feel that we have to pick one of those, concentrate on it and be mindful of the fact that in the future this committee should be looking at other equally important issues that we may decide upon.

I share your concern that the environmental issues you raised are extremely important. I believe there are several.

Mrs. Marland: Are you suggesting that, in the time frame, we can look at only one of those two major issues, then?

Mr. Chairman: It is up to the committee to decide on that. It is my feeling that any one of those issues, if you want to look at them in the way this committee should look at them to do them justice, we probably would have to pick one.

Mrs. Marland: We would have to pick only one. Is that what you are saying?

Mr. Chairman: I think that is probably what the committee should be addressing itself to.

Mrs. Marland: Are we talking about having, whatever that subject is, that task completed in three weeks? Is that what we are saying? I do not see why it needs to be only one.

Mr. Chairman: As I say, you asked for my feelings on it. That is what I think.

Mrs. Marland: Is it because we have only three weeks. Is that what I am clear about?

Mr. Chairman: Knowing the amount of time the House leaders have given us to be able to sit, we have no authority beyond that. I would certainly hope we get that once the new session starts, but at the moment we do not. I think you have to make hay while the sun shines.

Mr. G. I. Miller: I think the important issue that would have been requested by the Minister of the Environment (Mr. Bradley) would be to look at acid rain and the effects it is having in Ontario, the effects of the fact that our strategy for cleanup is reduced and also how it affects our friends south of the border to encourage them to do the same thing, because I do not think the boundaries mean anything for acid rain.

It is an important issue in the areas of agriculture and natural resources. Our forests are dying, particularly in Quebec. Our maple sugar bushes are deteriorating. While Mrs. Marland made an excellent point that we should be looking at a broader base, I do not believe we can do that in three weeks, and we should be zeroing in on one issue that is so important to Ontario and may be having an effect on bringing in controls south of the border.

I believe we should be looking at what is taking place at Inco, our Hydro generating stations--Nanticoke is one of the largest--to see what progress is being made there. Perhaps through the Ministry of Natural Resources we could take a look at what effect acid rain is having on our forests.

As I drive down Highway 401 and many highways, I see a lot of areas that are completely dead. I am not sure what the cause of it is. I do not know whether we can pinpoint it to acid rain, but it is a very serious issue. When our forests and natural resources are affected, it has to have an effect on people also.

Although we have only three weeks, we can come up with a plan of attack to have a look at it. First, we can bring in people from the Ministry of the Environment to feed us information. Perhaps we can then bring in people from the Ministry of Natural Resources and the Ministry of Agriculture and Food. I know we have expertise in the Ministry of Agriculture and Food.

Perhaps we could take a quick look at some other activities. I do not know whether any members want to do any travelling, but that is an option, and discuss the problem with our friends south of the border. I will await further debate from other members of the committee, but that is my view as to how we can approach the responsibility.

Mr. South: I think the issue of the highest priority is aerial pollution, and that is acid rain and other toxic materials that get into the air. We all agree, from what I have heard in the discussion, that this is the highest priority item we can discuss. If the time is sufficient for only one topic, then that is the one that would certainly receive my vote.

I do think that when we meet in committee three days a week it seems as much as any of us should be asked to do in this regard. We can cover a lot of ground in that time. In the end, what we should accept, no matter what this committee reports, is that it is only going to be a factor in the total scheme of things.

I do believe the thing that has the greatest influence on improving the environment is education. You have to get the kind of social consciousness that starts to consider pollution and those who cause pollution as a criminal offence.

One of the things that did more for the environment and pollution control in this province, and any of the legislation that has been enacted, any of the pious statements made by a lot of sincere people, the one headline that did more for us than anything else was when a judge was trying one of the Toronto polluters in regard to what he was discharging into the sewer. The headline read, "Caught Like a Rat in a Trap."

All of a sudden, there was a businessman dubbed with something that was very anti-social and very difficult to live with. Imagine his wife when she

went to her local bridge club or the golf course, the country club or whatever, after her husband, in essence, had been called a rat. That is the kind of thing which I feel does more, in regard to the environment, that is, the education and getting people to think in that kind of way.

1540

I think this committee can do more good by initially getting some expert information given to us by not only the Ministry of the Environment but also by the Ministry of Natural Resources--trees are one of the things that are very much affected by aerial pollution--and the Ministry of Agriculture and Food. Those are the three ministries within the government that we should hear some expert information from in the first week or so of our hearings.

We should visit some of the causes of the problem, but equally important is to go and visit those areas that are feeling the effects of it. As Mr. Miller has indicated, one of the areas is the sugar bushes of Quebec. We have to get the Americans on side. We feel, as a political entity, Ontario is far ahead of just about anywhere else, but we have to bring the Americans on side.

This committee can do more good, regardless of the legislation which may come out of this Legislature, by broadcasting and doing some public relations in this regard. The committee should visit a couple of places in the US which have been adversely affected by aerial contamination--apparently that is New Hampshire and New York states where you have the granite-type watersheds that do not respond to or do not buffer things like acid rain too well--and do some preliminary alerting to the people who may come on side with us and give us some good press in those areas.

That would be any local environmental groups, any local people who are badly affected by something like that, such as the tourist associations and the maple syrup industry. We have to bring some of those American groups on side so we get some good advance publicity and that kind of thing. This committee, in a sense then, is like an ambassador for this province. We are waving the flag down in the US, and I hope we will get some attention.

I would like to see a timetable which would recognize that fact. I do believe public relations and social awareness are among the most positive things this committee can do. We can pass legislation but, in the end, it is the will of the people, the people in total. Kimberly-Clark at Terrace Bay is a good example. When you have the public on side, then the legislation is secondary. If you have good legislation without having the public on side, you are dead.

I really think the committee should recognize that and we should set a schedule that will give us an opportunity to raise some public concern in the US on this very important issue.

Mrs. Grier: Could I have a question of the last speaker?

Mr. Chairman: Would you entertain a question from Mrs. Grier?

Mr. South: Yes.

Mrs. Grier: I have a concern because my understanding was that we had in effect the legislation in the Countdown Acid Rain program. You were suggesting that it has not worked and we have to go and publicize it rather than examine it and see how the mechanisms are working.

Mr. South: Our legislation will not have any effect on the US and this is where most of our problem is coming from.

Mr. Charlton: I will start out by referring back to the letter you referred to which the rest of the members of the committee have not seen yet, except for Ms. Fish, Ms. Grier and I do not know who else.

Mrs. Grier: I think it was just the chairman and the two critics.

Mr. Chairman: We will have copies made.

Mr. Charlton: I have seen the letter. Essentially, the letter makes it clear that there are a number of issues that this committee should be looking at, four, five or perhaps even six. What it also makes clear is that each of those issues is a project in itself.

I do not disagree with Mrs. Marland at all that we should be looking at the Niagara River-Great Lakes stuff, but we are not in a position, with little more than three weeks, to do any more than one of the five or six issues we should be looking at, if we are going to do any good by looking at them, if, as you suggest, we get to the bottom of them and come to any conclusions about what should be happening or not happening.

My view is that the acid rain issue should be done first, and I differentiate that from the acid rain and toxic rain issues being combined. I do not think they can be. Toxic rain is also an extremely important issue, but it has to be done by itself. In the first place, to a large extent, you are talking about different industries that are the problem, different technologies that will be required for the solutions, different locations, different formats altogether for the discussions around toxic rain as opposed to the discussions around acid rain. There is some overlap but, essentially, we are looking at quite different things.

In addition, of all the important issues we have to consider looking at now, the acid rain one is the only one where we have proceeded far enough to have an announced program of the government in place. Again, I go back to what Mrs. Marland said about not wanting to be sitting here 10 years from now still talking about the same issues on a select committee on the environment.

One of the things that is imperative for us is to determine, now that we are at the stage of having a government program in place, whether it is working or is capable of accomplishing its goals. There is no point in creating programs if we never look at whether they are working. On that basis, I am suggesting that is the reason why acid rain is the one that has to be up front, both in the context of the acid rain program and of what is not in that acid rain program, i.e., Mr. South's comments about the Americans not yet being on side.

As far as Mr. South's comments about travelling are concerned, on the question of acid rain, travel at this point is an absolute and total waste of time. Most of the members of this Legislature who have been around here for the last decade have travelled to the US on the acid rain issue at least five or six times. I spent five years as our caucus Environment critic and I have been on acid rain trips into the US on numerous occasions, as well as having brought bus loads of US citizens and US officials up here, into the Muskokas, etc. to look at the damaged lakes and look at the albeit inadequate programs that were under way in some of our plants here.

Our priority at this point has to be to assess the existing program's

approach to acid rain and whether it is capable of working. We have already done all the public relations stuff that Mr. South is talking about on the acid rain issue. Now, the question we have to delve into and resolve is the question of whether it is going to work. There is no point in our waiting until 1995 and the end of the program to decide that it has not worked.

From my perspective, what this committee should do now is to determine the five or six issues we want to look at over the next couple of years, determine which of those we are going to do first--and I recommend the acid rain one--perhaps even determine the order in which we will do them and submit that to the House leaders along with our budget and whatever else we submit, so that they are aware of our intention to sit on one of those issues during each break period and the order in which we will do them.

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Some of the other environmental issues that I think will have to be dealt with by this committee will require some travelling because they happen to be new and emerging issues that have not been studied to death, that we do not have a lot of expertise on and that we are going to go out and learn a lot about on our own. But acid rain is an issue that has been studied to death and travelled to death, and our job now is to ensure that the program direction in which we are going is appropriate and can work.

Ms. Fish: I think that a number of very important points have been made by those who have spoken ahead of me, so let me try to tighten it up by saying that I think our task today, in setting the terms of reference and according some advice on budget and that kind of thing, is perhaps a bit closer to what Mr. Charlton was just suggesting. I am firmly convinced that the work, even on the more narrow basis of bilateral environmental issues, which you and the members will be aware that I and my caucus colleagues objected to as being too narrow, is none the less much broader than can possibly be done in 15 or so sitting days.

I want to suggest that establishing a list for the committee of things that we would consider minimal to cover would be appropriate, ordering that list for priority, establishing what is started with in the first period of sitting and indicating, as Mr. Charlton has suggested, right off the top, that there is work that should continue for the committee in a subsequent period would be appropriate.

I share the view with many of those who have spoken, Mr. Miller and Mr. South, that we are unlikely to be able to handle more than one principal issue in this period. I might, however, shade it slightly differently and say that while I agree that we can likely complete or come close to completing, at least in terms of a pretty substantial interim report, one of the issues--and I agree, by the way, we should probably start with acid rain--I am of the view that we can ask that there be concurrent research undertaken to begin to prepare for the second key issue we might tackle. Then there will be a difference between what we as members might be dealing with at the table and the kind of preparatory work that we would want to begin to get under way so that we can begin receiving material and have it for the next round.

I am much of the view that there is a place for travel, and I think the possibility of raising public education and public profile in travelling, Mr. South, is extremely important. My hesitation would be in the area of such a brief sitting period, particularly if we are beginning with acid rain, and that seems to be a bit of a theme thus far from among the speakers. I say that

for reasons that may be a little bit different than those of Mr. Charlton. I have done some personal travelling on the matter, perhaps not as extensive as you, Mr. Charlton, but then again, I have not been here quite as long, so that may explain part of it.

Also, there is very substantial printed material and documentation that is already available, much of which I have read, and I expect that every member of this committee has probably digested the vast proportion of what is current because each of us, by our appointment here, is keenly interested in these matters.

While we might want to suggest a bit of a reserve for down the line on travel, I am not at all persuaded that is an appropriate use of the limited time we have in these 15 or 16 sitting days. I will make this additional point: if there is any thought that in this limited period of time we want to do a day or two of travelling, I suggest that the places we visit are not outside the Ontario jurisdiction. If there is something to be seen that we consider we need to see directly, it should be somewhere within the Ontario jurisdiction so that we are examining our problem at the outset.

I for one am not persuaded that we have to do that in this brief period of time. It might be preferable to suggest that any travelling that occurs might occur in a subsequent sitting period. It is unlikely to occur on the acid rain issue because of the amount of information that is already very generally available on the topic.

On the question of having various ministry representatives come before us in our first week to chat with us about backgrounds in some of these problem areas, there is absolutely no doubt in my mind. I agree wholeheartedly with you, Mr. Miller, that there is extensive expertise on these subjects within the several ministries. There is no doubt about it whatsoever.

Again, though, I would simply talk about the very narrow window that we have been given and ask our colleagues to consider the far more efficient mechanism to bring ourselves up to speed and that is for any who have not had the chance to glance over material recently to do so and utilize the next couple of weeks coming into the hearing date fairly effectively and to be assisted in that regard by Mr. Neufeld. I am sure he would be more than happy to put together an appropriate package of background information and provide us a bit of a guidepost through the materials so that we could have them in front of us in a timely way to be able to begin our discussion.

Perhaps I would not be as insistent on this, Mr. South, had there been a willingness to provide us with rather more than this very slender window to undertake the examination, but in looking at the real world of 15 days, to begin talking about a number of ministry officials coming in to chat with us a day or two each, we will barely have the time to look seriously at the things that we should, which is an analysis of the program, its effectiveness, steps not yet taken and so forth.

I would prefer, in the first instance, that we inform ourselves with written materials aggregated and/or prepared by legislative research; that our first area of investigation be in the acid rain area; that our second examination be the Niagara River and its toxics and that research begin on that concurrent with our sittings on acid rain so we are able to prepare ourselves properly; and that we move from there into the issues of toxic rain and Great Lakes water quality, perhaps not necessarily citing one or the other at this point in terms of order of dealing with it. I do not have a firm view

on that; someone else may. Those are the four subjects that leap to my mind that I think would be appropriate for the committee to deal with.

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As we have our discussion and examination on acid rain, particularly in the first few days, having received the material to refresh ourselves from legislative research, I am sure we are going to have some questions of a variety of officials. Some of them will be from the Ministry of the Environment I have no doubt. Some may well be from the Ministry of Agriculture and Food.

I would think that some from the Ministry of Natural Resources might be particularly interesting, though I suggest, Mr. Miller, that the area of questioning might be a bit different than what you supposed. I for one would be most interested in knowing what the compound environmental effects are of chemical and biological spraying in areas that have suffered acid damage, which is perhaps what you had in mind in briefing; I do not know. I would also be most interested in having Ontario Hydro officials in front of us and perhaps inviting officials from some of the private sector affected by Countdown Acid Rain or potentially affected by control programs.

Again, being mindful of the 15 days, I suggest that we have the package in front of us, that we engage in our discussion in the first couple of days to ensure that we well appreciate and understand, that we are then able to identify the witnesses that we would ask to be brought before the committee to consider some of these areas in greater depth, that there be concurrent research in the Niagara River toxics while the committee is sitting that would be to aggregate material and present it, and that we establish acid rain, Niagara River toxics, toxic rain and Great Lakes water quality as the four issues this committee will consider, beginning with acid rain and likely reporting on the first of a four-part study at the conclusion of the 15 sitting days.

Mr. Chairman: Thank you, Ms. Fish. I appreciate your putting together a direction for us to consider.

Mrs. Marland: I concur with the direction in which we seem to be heading. With the time factor as it has been outlined, we have to prioritize and obviously we are better to do one thing thoroughly. The only thing I would hate for us to do, however, is spend any time gathering data because on the subject of acid rain there is an extensive amount of data that exists and it exists very currently through organizations like the Canadian Coalition on Acid Rain.

The acid rain coalition is privately funded and has staffed two full-time people in Washington for the last two years, I think it is, one of them being Michael Perly. I would like us to be an action committee that really comes up with some recommendations that lead to action and solutions, not more information gathering. I suggest that if we have a presentation by Michael Perly from the acid rain coalition, we will very quickly know what the status is of the people currently in Washington and their viewpoints.

I wonder if any of the previous people on this committee who have been involved before, whether on a select committee or any formal all-party committee by any other name, have actually been down to Washington to meet with the legislators there on the subject of acid rain.

Mr. Chairman: We can check that through the clerk's department.

Mrs. Grier: There has never been a select committee on the environment; we are the first.

Mrs. Marland: Has there been a committee before that has dealt with the environment?

Mr. Chairman: I believe there have been committees that have looked at that issue, but there has not been an environment committee as such. There was the select committee on Ontario Hydro.

Mrs. Marland: Okay. When the time is appropriate, I would like to make that as a direction that we should go because the Canadian Coalition on Acid Rain, because it is active in the areas where there has to be action, which is working with the people in Washington, would be an ideal group to talk to. We do not have to know any more about what the effects are or what the cause is. We now have to deal with the remedy.

If the remedy is partly to get commitments of a political nature from all contributing parties to the problem, then it might well benefit this entire committee to go to Washington and sit down with the legislators there who are responsible for guiding the direction that comes from the southern jurisdiction as to the problem. I would very much like to see us do that. To know whether that would be beneficial it would be worth while, as I say, having Mike Perley come to the committee and tell us exactly what the status is today and what is going on.

Mr. Chairman: I certainly would suggest that we would have to give very serious consideration to having them here. I think they act as an umbrella group for a large number of interested organizations.

Mrs. Marland: They are also not biased by political community or business boundaries.

Mr. Chairman: Certainly, they do not subscribe to being political at all.

Mr. Charlton: On the point that Mrs. Marland just raised about travelling to Washington, I made my comments earlier about my thoughts about travel at this point. I honestly think that for us to go to Washington at this point would be an absolute waste of time. I cite the reasons why I say that. We should certainly have the coalition here before the committee. As I see it, and I tried to describe it earlier, our job is to assess the program and its effectiveness that we have put in place in Ontario.

The biggest holdup in terms of our being able to convince the Americans about what their role should be in acid rain cleanup is this whole question of economic cost. They know as well as we do the technologies exist to resolve the problem. They are still playing the research game and they are still talking in terms of--if you listened to Mr. Niles's comments yesterday and others yesterday on the acid rain question specifically, they are still saying they cannot afford to clean up.

The most important thing we can do here in Ontario, bar none, bar PR programs and convincing individual friends in the US, is to demonstrate in a clear and effective way that we can do the job and we can afford to do the job of cleanup both in power plants, which is their largest complaint and in other

kinds of producers, such as smelters at Inco. The priority has to be for this committee to ensure that the program that is in place is working and can work and/or what things are not being done in that program that should be done that will make it more effective as a demonstration of our ability to clean up acid rain emissions without bankrupting everybody in sight. If we show the Americans that, we win the question.

Mr. Partington: I understand the bilateral treatment of acid rain, i.e., Canada and the United States, is maybe the main objective of the committee. As Ms. Fish has indicated, there are four major ones at least such as the Niagara River toxic wastes. Right now nothing could be more timely with the convention taking place at the Sheraton Centre. I think it set the stage for the declaration signed by the four jurisdictions, Canada, US and New York state, which is a tremendous declaration of intent.

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I have been attending that convention and although the first morning was very positive and upbeat, the continuation shows there are tremendous challenges ahead and the mere declaration that we are going to solve the problem is something that we all share. It is nice to see it committed to writing. I submit that the greatest problem in international pollution is political, not technical. I think we have the scientists with the ability to meet the challenge if we provide the money and the political will. It seems with the subject matters we have, we could exhaust months of hearings.

With respect to the acid rain topic, Ms. Fish suggested some material be provided. I would like to see details of the US-Mexico acid rain agreement to see how that may have a bearing on Canada. I say that remembering that with respect to treaty agreements on the Rio Grande and on the Columbia River, in the past, the United States has taken different stands, particularly with respect to rivers, whether it is an upper or lower riparian. I think it is important to see if there is any practice like that that may have a bearing.

What is the US commitment to acid rain? With respect to the causes of acid rain, Mr. Charlton, I have not been here as long as you and I do not know all the details. I would be interested in learning that as our deliberations come forward. We talked about the effects on our lakes and about tree growth being stunted. There has been some evidence of that recently. The effect on human health is now becoming apparent. You have read in the papers today or yesterday about a seminar in Washington where there is some evidence that it will have long-term effects on the health of our children and on the health of older people with various illnesses. I think it would be important to gain that perspective.

Again, I agree with the suggestion of Ms. Fish that we treat all of these issues because you cannot have a select committee on the environment where you take one narrow area. All of these alone are international or bilateral in scope. They eliminate perhaps ones just as important in our area. What do we do with landfill sites? What do we do with municipal sewage treatment plants that are out of date? There are sewage systems. All of that I guess was excluded from the scope of these deliberations. Clearly, limiting it to the international ones will require a full commitment for a long time. I look forward to participating in that and hope that we can do each of them the justice that they have to receive.

Mr. Chairman: There are probably some who suggest that there are probably enough issues that we could discuss that would have made this

committee possibly a standing committee, but it is not the way it is.

Mr. Charlton: The former select committee on company law.

Mrs. Grier: It is obvious from what everybody said there are enough issues to keep us going forever. I am very conscious of what a struggle it has been to get us in place in the first place, let alone to get us meeting. I am very concerned that we use the time that now has been made available to us in the most practical possible way so that we can show that having a select committee on the environment is a worthwhile initiative and is going to do something for Ontario.

I am a little concerned that we not go out exploring a lot of different things, all of them very worth while, that have been done before in some different ways by other jurisdictions and are not primarily within our control to do something about. It is well over a year since the minister introduced Countdown Acid Rain. It is worth remembering that, when there were questions raised about the five-year averaging that is allowed for Ontario Hydro and about the limits that have been imposed on the four major contributors to acid rain in Ontario, that report made a very specific commitment saying a further opportunity will be provided to individuals or groups to express their views on the abatement program and its financing by appearing before the select committee on the environment.

Hearings of this new committee of the Legislature will be scheduled during the early part of 1986. As part of Countdown Acid Rain all of the four major polluters have to file six-monthly reports with the government. The first lot were filed last July.

Ms. Fish: I want to see them.

Mrs. Grier: I have seen them but we want to examine them in the context of what the companies say they mean and what, in fact, they mean. The Canadian Coalition on Acid Rain wrote to the Premier (Mr. Peterson) last August pointing out that those reports had been received and expressing concern that there were so many transboundary issues that this committee would take on too wide an agenda.

I am suggesting that our hearings be limited to consideration of the acid rain issue and specifically to the progress reports required under the various acid rain regulations. Indeed, the coalition sees our first job as monitoring Countdown Acid Rain and where it has gotten to. We have now finished the second six months of that program. In a meeting with Inco yesterday, I received their second progress report. I am very concerned that their first one has never even been reviewed to know if the progress they are making is adequate or whether Countdown Acid Rain is adequate. I think that is what in the 15 days we have to focus on.

I do not want to see all the ministries that are concerned come in and tell us about the effects of acid rain. I want them to come in to tell us what they are doing to make sure that Countdown Acid Rain is effective and what they are doing to make sure the major people who are covered by the program are living up to that commitment. We are going to have to give an opportunity to Ontario Hydro--and I say that with some reluctance, having been on the select committee on energy and knowing that if you give Hydro one day, they will come in with enough material to fill a week--but they have to be contained, and the other participants in it, as well as the coalition.

It would be very helpful to us to find an expert on technology who could counter-explain or expand upon what he may hear when we get into the program.

Mr. Charlton: I was just going to make the suggestion that there is probably somebody who was associated with the federal-provincial joint committee on Inco and Falconbridge who would have the expertise to provide us with comment about technology, cost of technology and so on. I do not have any names but that federal-provincial joint committee that reported about five years ago is the most extensive study that I am aware of anywhere in the world of the technologies to deal with acid rain emissions.

Through the clerk we could perhaps get a list of both the participants on the committee and the staff hired by the committee to do their technical work to see whether there is somebody in there we can find as an expert to bring in.

Mrs. Grier: In summary, I agree that the general work of the committee should be the four items enumerated by Ms. Fish. The first one would be acid rain. If that is agreeable, we can concentrate on: "Who do we need to hear from to put the Countdown Acid Rain in perspective and tell us where it has gotten to. Who do we need to hear from to help us understand and evaluate what we have been told by those people controlled under the program? What kind of recommendations do we want to make to the government with respect to the ongoing program?"

Mr. Chairman: Mrs. Grier, could I have thoughts, if you wish to give them right now, on the prioritizing that Ms. Fish did on the other items?

Mrs. Grier: I am very happy to see the Niagara one. I think your third was toxic rain. I would prefer to see Great Lakes water quality come next and toxic last. I say that because of the Great Lakes water quality agreement expiring and the immediate action plans that are going to be called upon which, by that point, might be in a position that we could review; and also in the fact that part of yesterday's statement of intent called for some kind of toxic management plan of Lake Ontario by 1988. The timing might be such that we could have some impact on that if we looked on it next. Those are decisions that we can perhaps cross when we come to them.

Mr. Charlton: Understanding that we would agree now what our second topic is.

Mrs. Grier: Yes, I have no problem with that.

Mr. Chairman: Thank you, Mrs. Grier. It would be nice to believe that the Countdown Acid Rain report had a typo in it in in that we are already in 1987.

Mr. Partington: Just a comment: My original information was that the topic acid rain was to be bilateral in nature, indicating cross-jurisdictional pollution. As I listened to Mrs. Grier, what you are talking about is reviewing an internal document that relates only to that part of acid rain that originates in Ontario. Clearly, if I read the newspapers correctly and the concerns and fears that people have about the environment and about their own personal health, not to address the commitment or the pollution or the sources of pollution in the United States is to restrict our review of this subject matter in a way we should not.

Mrs. Grier: I would respond to that by pointing out that all of the review of the bilateral effects and the effects of acid rain presumably has been done by the ministry, and its response was an internal program called Countdown Acid Rain. That program has never been evaluated by the Legislature. It was announced by the minister with the commitment that a committee would evaluate it. I feel I would like to see that happen, while not for a moment downplaying the fact that this is only one aspect of the problem and we have to go beyond that, as I think we will do in the toxic rain.

Mr. Partington: I guess I can make one final comment. It seems to me that we are exploring the pollution in the Great Lakes without considering the pollutants from the United States side as they contribute. That is my only comment.

Mr. G. I. Miller: Could I make a comment? I think we are really missing a chance here. We have the first opportunity I have seen since I have been around here in 10 years that we have a committee to look particularly at something that is going to affect all of Ontario.

It is not caused in Ontario. Lots of studies have been done that indicate our problem has been caused outside our boundary. If we do not take advantage of it when we have the opportunity, I think we are missing a little bit. While those broader issues are important, I think we should be zeroing in on one issue. You say we have 15 days? I wonder how many days we really do have. Is it 12 or 15? We have three weeks, right? Are we going to sit five days a week? That has not been decided yet.

Mr. Chairman: I indicated at the outset that as we decide what we are going to do, we have to keep in mind that our maximum number of days is 15.

Mr. G. I. Miller: I think that is very important.

Mr. Chairman: I do not think we have decided yet exactly how many days each week we sit. Certainly we will have to at some point, but the point is well made. I must indicate, Mr. Miller, being new as a chairman, that you kind of threw me a little bit when you asked for a supplementary. I was looking back at the table and there was nobody there.

Mr. G. I. Miller: Okay. I am sorry. I will not say any more.

Mr. Chairman: Now the member for the riding which is the centre of the fallout.

Mr. Eves: I agree with the comments made about determining our priorities and prioritizing our issues, and I accept Mrs. Grier's analysis of the third and fourth issues, for what that is worth.

With respect to travel, as Mr. Charlton and Ms. Fish have pointed out, several members of the Legislature, including myself, have had the opportunity over a few years of travelling to the United States and having US legislators and media types visit Ontario and visit not only our sources here but also the areas of the province--Muskoka, Parry Sound and Haliburton--that are perhaps the most damaged by acid rain and sulphuric emissions.

I would agree that we should do our homework in Ontario first and examine the Ontario experience before we think too much about travelling

outside the province--not that I am averse to doing that and not that I disagree with the comments made by Mr. Miller and others. I just think that in the time line we have right now, which is perhaps three or three and a half weeks to look at this very important issue, I do not know whether we are going to get around to having the time to travel to other jurisdictions, perhaps not even the time to travel to various part of Ontario.

I think we should deal with the practical problems, perhaps more mundane problems of deciding how many days a week we are going to sit, how many sitting days we are really looking at. All of the suggestions that have been made here are excellent, about witnesses who could appear before the committee and the information we could gather from them. I quite agree that we should be evaluating the Ontario experience and whether major polluters in Ontario have been doing what they have agreed to do and what the government has asked that they do.

I also agree with the comments made by Ms. Fish about Hydro officials. Various ministry officials, I think, should be brought in to give us their viewpoints, but I would also agree that we should do our homework as much as possible prior to that so that we do not take up the very valuable time of the committee discussing matters of fact that should be basic knowledge for every member of the committee. I would certainly think we should have Mr. Perley and the Canadian Coalition on Acid Rain, and I would quite agree that they could be of very great assistance in our deliberations.

There have been other perhaps unstructured committees--ad hoc committees, for lack of a better word--that Mr. Norton set up when he was the Minister of the Environment, which did have representatives from all three parties. The Liberal representative, as I recall, was Mr. Kerrio, and we travelled to Illinois and other states, took our message there and invited them back. I believe Mr. Charlton was part of that process as well back in 1981, 1982 and 1983.

To answer the question that Mrs. Marland asked earlier, it has been done in the past. I quite agree with Mr. Charlton that perhaps this select committee will have a longer lifespan than the famous, or the infamous, committee on company law.

Mr. Chairman: Thank you, Mr. Eves. We have heard from almost everybody on the committee, and I still have a speakers' list: Mr. South, Mr. Charlton, Mr. Miller and then Ms. Fish again.

I wonder if I might just indicate what I sense is a consensus, and perhaps we can see whether we have agreement, which is that we do look at acid rain initially with an indication that we should prioritize other issues.

The second one on which there appears to be some consensus right now would be the Niagara River issue; that we ask our research officer to do some concurrent research on that second issue while we are deliberating on acid rain; that Mr. Neufeld be asked to put together a package for us so that we can assimilate that information over the next couple of weeks, and that we include in that research package the progress reports of the various firms that are part of the Countdown Acid Rain program.

I do not want to go beyond that as far as what I see is a consensus right now is concerned. I realize it is subject to whom we have before us, how many days we sit and other things that the committee might want to make a decision on, but I wonder whether we could come to some agreement on that as a consensus now or some time this afternoon.

Ms. Fish: Mr. Chairman, why do you not ask the committee if it agrees that as far as you have gone is a fair representation of the consensus to this point? I think it is. Perhaps we could dispose of at least going that far at this point, and discussion might then pick up on the things that have been left unidentified as consensus.

Mr. Chairman: Ms. Fish, that was my wish. I was going to move quickly in before anybody could disagree with that being the consensus.

Interjection.

Mrs. Grier: Then it becomes how.

Mr. Chairman: Yes.

Ms. Fish: All right. I would like to suggest that in the research package that has been cleared on acid rain, I think Mr. Partington made an excellent point about the agreements the US had and I think we should have that information in front of us, as well as some background information on the US acid rain program, and I am quite persuaded that, in beginning an examination in Ontario with Ontario's program, we can also accommodate an understanding of the US program and be able to comment on that as well.

Mr. Chairman: Mr. Neufeld has been busily writing most of the meeting.

Ms. Fish: I did not want that part to get left out.

Mr. Chairman: Not to direct the rest of the afternoon, of course, but we should be determining the sitting days, at least for the first week, as to what we will do. The suggestion is made that we come in and discuss the research package, but perhaps we will be a little more definitive as to what we do that first week, inasmuch as I think it is important for the clerk to have the opportunity to get in touch with those whom we wish to have.

Ms. Fish: I suggest that we identify the specific witnesses we would like come before us. If we cannot do so today, can we do so at an earlier date next week or something like that? A couple of names have been suggested that we track down. I agree it should be done prior to our first sitting day so that the clerk has the opportunity of getting in touch with people.

Mr. Chairman: We will wait to see how we proceed today, and perhaps we will need to--

Ms. Fish: I just make that suggestion because I do not know whether everyone is prepared for names right away.

Mrs. Grier: I think we should identify the parties we would like to hear from, not the names but the coalition, firms or whatever and (inaudible). Perhaps, then, they need to be contacted and asked, given what we are going to do, how much time? Maybe we can get both Algoma and Falconbridge on the same day rather than allow a day for each of them, but perhaps that needs to be explored. Then maybe a steering committee could establish the actual breakdown of time, if we can agree on whom we want to see.

Mr. Chairman: Mrs. Grier, that is wonderful. I would love to have a steering committee.

Mrs. Marland: Are we saying, then, that if Mike Perley suggests that a committee of this stature--and I think this committee does have tremendous stature, not only because of the particular members on it but also because it is an all-party committee of the Ontario Legislature--if Mike Perley were to suggest that there was merit to this stature of committee going to speak to the people he singularly is trying to lobby in Washington, are we saying we would not look at that as part of the mandate of this committee in finding a solution? We know what the solutions are. My concern is that we look at action rather than reviewing where we are today.

Ms. Fish: Maybe I should respond to this.

Mr. Chairman: The point is well taken. I would like to get back to my speakers' list, if I might, pretty soon. I have a response because it was a query on something we have talked about from Ms. Fish and then Mr. South.

Ms. Fish: Just quickly in response to Mrs. Marland, I would say there may be value in doing that. I was not suggesting there was not value, but I feel rather strongly that 15 sitting days maximum is very narrow, and to take up our first 15 days by going to Washington, in my view, is not the most productive use.

I would prefer that we begin with the analysis that I think is of critical importance, which is of our own program, have the material and engage in an understanding of what is happening on the US side and be prepared at the close of the next session, perhaps towards the end of June, to sit when the select committee continues its consideration to look at that point as the appropriate point to travel. We will have under our belt our own house, hopefully having either put it in order or identified what needs doing, and will have digested the material that you, Mr. Partington and others have spoken about.

Mr. Charlton: And perhaps a draft report in our hands to take with us.

Mr. South: I do not want to upset the consensus that seems to be developing, but I would like the committee to consider that the problem with Countdown Acid Rain is that it is really a best guess. We know the amount of sulphur dioxide, etc., that is being produced in Ontario that ends up in the air. What we do not know is the exact amount or even close to it that we have to cut that back by to be left with healthy forests again. We do not know the assimilating capacity of the atmosphere out there.

We can determine that Countdown Acid Rain and the program that the Ministry of the Environment has put together and that the companies are in truth complying and that in truth we will get whatever, a 50 per cent reduction over so many years. We can end up having decided that will be accomplished, but we do not know that will end up giving us healthy forests.

Mr. Charlton: On a point of order, Mr. Chairman: All the information Mr. South is referring to is exactly the pieces of information that exist in the existing federal and provincial studies on acid rain that have already been done. That data you are talking about in terms of the levels we have to reach to get back into balance have been known for the better part of a decade now in Ontario. We do not need to spend a lot of time collecting data that is already in studies both at the federal and provincial levels, which are sitting in our offices already.

Mr. South: I guess we are in disagreement. I do not think anybody does know that. What level of sulphur dioxide in the air will end up giving us good forests again? We know what we are doing now is causing unhealthy forests. We know it has to be cut back. We know Ontario is only causing approximately half of the problem in regard to acid rain. If we concentrate on what is going on in Ontario, we are only looking at half the problem.

I get back to what I said initially, that very much we have to make everyone aware that we have to do something. We better do something in a hurry and we better all get cutting back. If we just cut back, then we are doing something positive, but to be overly concerned as to whether a 50 per cent cutback will do it or we need 75 per cent I suggest is going to take us a long time to find out. It is going to be 10 or 20 years before we know whether the programs we are putting in place are going to be adequate.

First of all, I think we should get brought up to speed by the Ministry of the Environment, the Ministry of Natural Resources and the Ministry of Agriculture and Food and get some good basic information in regard to what they know. We should raise the flag and go down to the US and try to get as much support as we can to get the Americans feeling the same way we feel.

Mr. Chairman: Mr. Charlton was the next speaker. Mr. South, you wanted to make some comments; something you said at the--

Mr. South: Oh, yes. I said three days a week is fine.

Mr. Chairman: Mr. Miller.

Mr. G. I. Miller: On the number of days?

Mr. Chairman: No, you were next on my speaker list.

Mr. G. I. Miller: Was I on the list? I thought I had made my point. I support what Larry has said. I noticed Ernie when he made his remarks. I do not think there is an area in Ontario that is suffering any more than Ernie's area is, the maple forests in that area and the lakes. I believe you are only able to fish up to a certain length at the present time. I know our water is a concern to Toronto and urban people as it is to everyone because we drink it right here now.

The crucial thing is to try to get our friends to the south to agree to co-operate. If we can achieve that by zeroing in on one issue--I think the minister has made it very plain in his background material that is the tool he would like to use. My main concern, and I will express it very clearly, is that I want to leave Ontario better than--I do not care about the politics of it. I want to use our power to leave a better Ontario. The way we have to do it is use the tools to bring in the ministry in the beginning to explain what it has done and give us an up-to-date briefing and use that expertise. I see Brian is nodding his head. You have been around a long while, Brian, and I appreciate that.

Mrs. Grier: None of us disagrees with that.

Mr. G. I. Miller: Pardon me?

Mrs. Grier: We all agree we want to hear from the ministry.

Mr. G. I. Miller: Yes.

Mrs. Grier: But what bothers me is that the government's solution to the broader problem, after months and years of examining it, was a program. In putting in that program, they said that in order to make sure it is a good program, we want a select committee to examine it.

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Mr. G. I. Miller: Exactly.

Mrs. Grier: Now I seem to hear members of the government saying--

Mr. G. I. Miller: We want to start over.

Mrs. Grier: --let us go back to square one and look at the whole thing again. I am suspicious that the ministry does not want us to examine its program. Is there something we might find that people are uncertain about?

Mr. D. W. Smith: Never.

Mr. G. I. Miller: In a minority situation, we are the government. We are trying to give it direction and I guess that is what we are trying to decide right now.

Mrs. Grier: But you asked for a select committee to evaluate the direction you had given. Now you seem to be resisting the attempt to do that.

Mr. G. I. Miller: No, I am not resisting. I am just giving my input. When we arrive at the final decision, I will be satisfied.

Mr. Chairman: Thank you, Mr. Miller. Is there some concern developing from a suggestion that having input from the ministries may not be worthwhile or informative? I suggest that we consider the fact that, as far as the Ministry of the Environment is concerned and inasmuch as the Countdown Acid Rain program is a year or year and a half old, just as we would need to receive progress reports from the companies that are named in it, so it would be important to have the ministry here to give its update from its point of view on how the Countdown Acid Rain program is working. I do not think there would be any disagreement from the Ministry of the Environment that we would need to have them or their officials here to provide input to the committee.

Mr. Charlton: We have a joint comment here, just from a quick discussion--

Mr. Chairman: Is this a communique?

Ms. Fish: Yes, it is a bilateral communique.

Mr. Charlton: --that can perhaps deal with the concerns that are being expressed by the two government members. We suggest that we ask the Ministry of the Environment to co-ordinate with the other ministries that have been suggested on a written submission to this committee in advance of the start of our hearings and that the ministry make officials available to discuss it with us, but that we not waste the time of the committee going through two weeks of presentations from four ministries because that is what it would take. It would take two of our three weeks. We have been through it before. Make them submit it to us in writing and then make their officials

available to discuss and answer questions of members of the committee about the program and what they have set out in their presentation.

Mrs. Grier: Then we should take the same approach with Ontario Hydro, Inco, Algoma and Falconbridge and say, "Submit to us in writing your interpretation of these very technical reports that you have done and where you are at and be available for a certain amount of time to discuss it with us." Then we can go from there.

Mr. D. W. Smith: I am new here. Is everybody in agreement with what Mr. Charlton said, that there has been base information here for 10 years which has never been acted on? Is that what you really said just a short while ago?

Mr. Charlton: No, that is not what I said. What I said was that the first major study on acid rain and its effects on Ontario was tabled in the federal House of Commons 10 years ago. There have been a whole series of subsequent studies updating that since then. We have studies galore setting out all of the background information, information that Mr. Miller and Mr. South have expressed their concerns about knowing, including the kinds of levels we have to get down to to protect the environment--the lakes, the forests, the farms and the people of this province. For example, there is all kinds of data on per acre and per square mile deposition that we have to get down to. Those studies exist. Those were studies of the problem, not necessarily studies of the solution.

In addition to that, there was a joint federal-provincial committee that studied the acid rain control abatement problem. Inco was the focus of that study. To the best of my knowledge, it is the most extensive study ever done on all the available technologies to abate sulphur dioxide emissions. That base data is available as well. That is the other side of the question. That is not the problem; that is the potential for solutions.

We are saying that there is no point in this committee going back over 15 years of work. That work has been done. We need to make the best use we can of the information that work provides to us. There is no question about that. We do not ignore the existence of all that work, but our primary function has to be as suggested in the documents. The Countdown Acid Rain program specifically tells us that the primary job of this committee has to be to review the program it now has put in place as a result of all that work.

Mrs. Grier: As a first stage, maybe we can refer everyone to Mr. Neufeld's paper of January 1986 called Acid Rain in Ontario. It has 84 footnotes. If anyone wanted to read all the various volumes enumerated in the footnotes, he would know more about acid rain than anyone except Mr. Neufeld.

Mr. Chairman: Mrs. Grier, I was one of the first recipients of that paper. It was directed to me as the chairman of the select committee on the environment way back then.

I would like an agreement on how we handle the input from the ministry. Should we proceed to ask them to make officials available to us on a specific day during that first week or should we ask them to present to us their individual or collective comments on the Countdown Acid Rain program and then also make their officials available to us to discuss that? I think we should get input from them. It is a matter of deciding which way to proceed.

Ms. Fish: I support Mr. Charlton's suggestion of proceeding in the

most expeditious and efficient way possible, which is to request that there be a co-ordinated written submission provided to us for our advance review and that officials then be available as required to answer questions.

Mr. Chairman: With or without specifying a day during that first week?

Ms. Fish: I would simply say, "that first week," recognizing that there will be some shifting and discussion and that kind of thing.

Mr. Charlton: Mr. Chairman, you will find that once you have informed the Ministry of the Environment and the other affected ministries of your intent, what you want from them and that you want them to be available, they will have people here daily for the first week. They will want to monitor what others are saying. They will have people here for that first week, both to answer our questions and to monitor the answers that others are giving.

Mr. Chairman: Does any member of the committee have an opposing view as to proceeding in that manner?

Mrs. Grier: I agree with doing that with the ministries. At the same time, I suggest we advise Ontario Hydro, Inco, Algoma, Falconbridge and the Canadian Coalition on Acid Rain that the committee has met and has determined that its first task is to review the Countdown Acid Rain program. We should advise them of the weeks we are going to be meeting and ask the four industries to prepare written comments for the committee and hold themselves in readiness to come and discuss those comments with us at a day in the first or second week of our hearings. There should be some discussion between you or the clerk and them as to how many hours they want. Then we should divide what Hydro says it wants by 10 and give everyone else equal time.

Mr. Chairman: Are there any comments on that amendment to the motion?

Mrs. Grier: I have been through Hydro before.

Mr. Chairman: None? To my mind, it sounds like a neat administrative way to focus the input from various parties.

Mr. Charlton: I have no further comments or amendments to what the member for Lakeshore (Mrs. Grier) has just suggested. I agree with the total proposal that now is before you. I think the chairman should keep in mind that one of the things we found on the select committee on energy, when we were dealing with presentations from Hydro and from those who did not agree with Hydro, was that we may have to think about a period at the very end of the hearings when perhaps we want to bring back company officials.

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For example, if we go through questioning the ministries and questioning the companies and then we hear from the Canadian Coalition on Acid Rain, which will inevitably try to rebut some of the things the ministries and companies have said, we may find ourselves in a position where we want to go back to the ministries and the companies with further questions. We should probably think about holding a couple of days at the end aside for that process.

Mr. Chairman: Certainly.

There is one other main item, which is the number of days we sit. Do we

need to decide that today, or shall it become a matter of the organizing committee sitting and deciding how many people, companies, etc., and sorting it out?

Mrs. Grier: Do we agree to a steering committee or an organizing committee? I think that is the most sensible way to do it. Then they can communicate with their respective caucuses.

Mr. Chairman: It is my hope that we will be able to proceed that way. I do not think we will need another meeting of the whole committee because I think we have received a consensus on the majority of the major items; it is only a matter of administrative detail at this point.

Mrs. Grier moves that we establish a steering committee to establish the actual sitting days and timetable.

Motion agreed to.

Ms. Fish: Let us indicate who will sit on that committee.

Mr. Chairman: Yes. I have an indication that Mr. McGuigan, our vice-chairman, will sit for the Liberal Party.

Mrs. Grier: It will be me for us.

Mr. Chairman: I presume the critics from the other two parties will sit on it.

Ms. Fish: In our case, it will be my colleague Mr. Partington.

Mr. Chairman: Okay, and I suggest, subject to us being able to arrange such, that we meet very early next week to consider the deputants and the sitting days. We will make sure that we provide that information to all the members of the committee.

Mr. Neufeld: I would like to offer a question for clarification in terms of my direction, just to review. It sounds to me as if we are saying that for the next three weeks we sit, we are going to be confining ourselves primarily to the Countdown Acid Rain program. That is what I assume we have been saying.

Ms. Fish: For discussion in committee? Yes.

Mr. Neufeld: So in terms of the background documents, the interest would be focused primarily on some kind of summary and review of the ministry's Countdown Acid Rain program.

Mr. Charlton: In addition to that, I think you have heard comments from a couple of members about--

Mr. Neufeld:--the US stuff.

Mr. Charlton: Not only the US stuff, but also the basic background stuff on the acid rain issue, which they do not seem to feel comfortable with.

Ms. Fish: I think part of the difficulty is that we have had a change in membership of the committee from its initial membership. There was a distribution of your background material to the initial main membership; that

is not what we have here. Just for starters, your issue paper should go around again with copies of Countdown Acid Rain and a bit of analysis and update which you might want to provide in that regard. I think that is dead right. That will deal with the basic information question and the guideposts through the current program of action or lack thereof.

You might do a clippings scan to see if there are relevant articles that are changed. You might do a Hansard check and pick up the materials that Mr. Partington has suggested on the US package, giving priority first to those things that deal with us, second to the US package.

Once we get into our sittings here to discuss that stuff, you could then put together material on Niagara River toxics. When that material becomes available and perhaps in more than one stage, some time could be taken, half an hour of the committee's time, for organizational purposes to indicate to us that you have some pertinent material on Niagara River toxics and what it is. We will have it in hand and be able to review it, knowing that our main area of discussion in committee will not be on that material, but on acid rain.

Mr. Neufeld: That is helpful.

Mr. Chairman: One of the important things is to receive the progress reports from the various companies. If we do not, we will ask for them. If we could obtain those prior to getting back, that would be very helpful.

Mr. Neufeld: Right.

Ms. Fish: The companies and Hydro.

Mr. Chairman: The last item on our agenda is budget. The clerk has just handed out two of them.

Ms. Fish: We are interested in an appropriate budget.

Mr. Chairman: It is certainly appropriate, however, the Board of Internal Economy may not think so. There are two because the end of the fiscal year is coming up. There is one up to March 31 and one subsequent to that. The big one is between now and then. The only revision I suggest we may need to make is in the 1986-87 estimates with respect to travel.

Ms. Fish: I suggest they need to be flipped and that which is listed 1987-88 is likely a typo; it should be listed as 1986-87. The 1986-87 I am sure is a typo when we want to list 1987-88, since we have already decided that our core travel will occur in the 1987-88 fiscal year.

Mr. Chairman: You, of course, Ms. Fish, and probably rightly, have extended the budget to include any potential sittings in other breaks that we would have during 1987-88.

Ms. Fish: Yes.

Interjection.

Ms. Fish: I beg your pardon? Just for this project.

Mr. Charlton: These two budgets are just for this current project for which we have been approved, and there are two because they happen to span the end of the fiscal year.

Ms. Fish: What kind of travel does transportation and communications cover under 1986-87?

Mr. Chairman: There is a travel expense of \$13,460, this budget, of course, being prepared prior to today's meeting and anticipating all eventualities. Even the possibility of including a trip outside the province is in there, but it appears that the consensus is that Sweden is out, Germany is out, and Washington definitely, because I hate landing at that stupid airport over the water.

Mrs. Grier: I have a horrible feeling Sudbury might be in. The last committee I was on got as far as Thunder Bay. It might well be that this one gets to Sudbury, in my experience.

Ms. Fish: I think there should be provision, and I for one would be content to rely on the clerk, to look at a ball park that would be satisfactory. Provision for in-province travel is appropriate, with the realization that we may not take up all of it, depending on the time, but I do not think it is necessary to use ex-province travel unless this 1987-88 will be presumed to be the budget for this select committee for 1987-88.

Mr. Chairman: I will make sure when I go in front of the board that I indicate that this is simply for what we have been given a mandate for this break.

Ms. Fish: For this break only.

Mr. Chairman: If indeed we do get some additional authorization, we will be back for a revision of that.

Ms. Fish: Okay.

Mr. Chairman: I should indicate that \$13,460 is strictly in-province travel.

Ms. Fish: Oh, is it? Fine; that is great.

Is the clerk satisfied that this budget is a reasonable ball park, given the consensus we have reached today?

Clerk of the Committee: It would cover everything, including if you wanted to travel for one week to two locations in Ontario. Also, 1987-88 takes into consideration you having your report ready for printing. Everything is pretty well thought out.

Ms. Fish: Does it look to bilingual printing of the report?

Clerk of the Committee: I assume so and because the report would not be prepared until the 1987-88, we could always go for a supplementary if it were going to be more than the amount.

Mr. Chairman: Under supplies and equipment in the 1987-88, there is an allotment of \$2,000 for printing of the committee report.

Ms. Fish moves adoption of the budget.

Motion agreed to.

Mr. Chairman: The budget is adopted and I will present that next Monday at the Board of Internal Economy. Subject to any drastic revision, it should be approved. I think it is a very reasonable one.

Before I adjourn the committee, and we will next be meeting the week of February 23, I want direction as to whether we meet on the Monday or Tuesday of that week.

Mrs. Grier: I will not be here on that Monday.

Mr. G. I. Miller: Make it Tuesday.

Ms. Fish: What is the meeting time? 10 a.m.?

Mr. Chairman: Is Tuesday okay?

Ms. Fish: Yes.

Mr. Chairman: Subject to the steering committee revising it, I would suggest 10 a.m. We will notify you through the chair from the steering committee precisely what our agenda that first week will be.

Ms. Fish: That would be great. Before you gavel us to a close, may I suggest that for rough planning purposes in our diaries, subject to the steering committee, we look at 10 a.m. to 12 something and perhaps 2 p.m. to 4:30 p.m. as the normal sitting periods, so we can still be booking other appointments and other responsibilities?

Mr. Chairman: I think it is reasonable to expect that to be the kind of agenda we will have.

Ms. Fish: Okay, that is great, at least for the first day.

The committee adjourned at 5:01 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ORGANIZATION

ACID RAIN

TUESDAY, FEBRUARY 24, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitution:

Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ministry of the Environment:

Bradley, Hon. J. J., Minister of the Environment (St. Catharines L)

Balsillie, Dr. D., Assistant Deputy Minister, Environmental Services Division

Scott, G. W., Co-ordinator, Acid Precipitation Office

Griffith, C., Senior Economist, Policy and Planning Branch

LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON THE ENVIRONMENT

Tuesday, February 24, 1987

The committee met at 10:08 a.m. in room 151.

ORGANIZATION

Mr. Chairman: Good morning, members of the committee and guests.

Just before we get started this morning, there are a couple of housekeeping matters we have to take care of. We need a vice-chairman for the committee. You will recall that we did elect a vice-chairman, but he has now been moved to another committee. I will entertain nominations for vice-chairman.

Mrs. Grier: I nominate Gordon Miller.

Mr. Partington: I second that.

Mr. Chairman: All in favour? Congratulations, Mr. Miller. It is the honour and the glory that count; the pay is not that great, in spite of what the standing committee on the Legislative Assembly has indicated in the last couple of days.

There are a couple of housekeeping things David Neufeld wants to mention.

Mr. Neufeld: Last week, members received copies of my background report. As you may have noticed, appendices 2 through 5 are not included in the body of the report; they are instead listed as exhibits. I have drafted a little memo that will help you match exhibit numbers to appendices in case you are looking for specifics which I refer to. That was the point I wanted to draw to the members' attention.

Mr. Chairman: Also, at noon, if the steering committee, which now includes you, Mr. Miller, would remain for a few minutes, there are a few matters we should discuss with respect to our scheduling. We will leave any other administrative matters that the committee as a whole should deal with until this afternoon at the end of our proceedings. We will have to make some changes to the tentative schedule which the steering committee had drawn up and which the clerk has submitted to you.

ACID RAIN

Mr. Chairman: Minister, I welcome you to the select committee on the environment. I understand you have other commitments this morning that mean you will have to take leave of us after you have made a statement to us. We hope you will be able at a later date in our proceedings to return with any wrapup comments you might be able to make at that time. I will ask you to carry on, if you want to make a statement to us, and then perhaps you can introduce any officials who will be here to answer questions when you have to take your leave.

Hon. Mr. Bradley: Thank you very much, Mr. Chairman. First of all, I want to say how different it is, having gone through the estimates procedure with some who are in the room, to appear before a committee as a witness rather than as one of the people asking the questions, which was always more fun than having to provide the answers to the questions.

I am pleased the committee has seen the light of day on this occasion. As you have indicated, Mr. Chairman, I will be delivering a relatively brief statement to members of the committee and I will be pleased to come back. I know you will be deliberating for some time and you will be dealing with a number of issues. At the conclusion of that, if you want the opportunity to deal directly with me on some of those issues, I will be very pleased to come back at a time that is mutually convenient to the committee and to me to deal with those issues in an appropriate fashion.

I want to indicate that I will be introducing them a little later on because I will be deeply involved with this, but David Balsillie, who is the assistant deputy minister, and Wayne Scott, who is one of the primary people, if not the primary person, dealing with acid rain in our ministry, will be joining me at the conclusion of this and will be assisting the committee with a presentation.

I am pleased to be here today at this inaugural session of the select committee. The work of this committee will contribute to our government's efforts to improve the environment in Ontario. The committee can give the Legislature a comprehensive outlook on acid rain and other bilateral environmental issues. It also provides us with a public forum in which we can exchange views and share information. Today, with some of my ministry officials, I hope to contribute to that process.

Our government is tackling the acid rain problem with the Countdown Acid Rain program. Within the first three years of the program, each of the four major sulphur dioxide polluters must complete the research and development needed to establish the most cost-effective abatement methods. By December 31, 1988, they will have submitted a report describing the technology to be used and the costs that it entails.

The companies will then be expected to follow through and implement a staged abatement program, with pollution controls that enable them to meet legal requirements by the 1994 deadline. By that deadline, these four companies will have reduced their collective SO₂ emissions by a total of 67 per cent.

You have each received a Countdown Acid Rain package. This contains an overview of acid rain as it relates to Ontario and details of the program. It also includes my ministry's summary and analysis of the first progress reports from our major sources. The second set of reports came in at the end of January, and they are now being reviewed.

I look forward to your comments on these first steps. Over the years, Ontario has developed a wealth of information on the movement and impact of acid rain. We recently published a Canadian report called Assessment of the State of Knowledge on the Long Range Transport of Pollutants and Acid Deposition. This report represents over 20 years of detailed study. This and other information has convinced our government that acid rain is a serious problem, representing a threat to both our environment and the long-term health of our economy.

In March 1984, Ontario signed the federal-provincial agreement, the action in which the seven eastern provinces agreed to cut their collective sulphur dioxide emissions by 50 per cent. A year later, allocations to meet this 50 per cent reduction commitment were made by each province. Ontario's emission objective was an annual limit of 1,030 kilotonnes.

When I became Minister of the Environment, I decided that Ontario should

make even larger cuts. Under Countdown Acid Rain, Ontario's annual SO₂ emissions will be decreased by 60 per cent and capped at 885 kilotonnes by 1994.

We have now had a year of experience, and I am pleased to say that Countdown Acid Rain is moving on track. Inco has reported it is installing a new flotation system to remove sulphur from its crushed ore. Ontario Hydro has reported it is proceeding with an application to assess four types of scrubbers. Falconbridge has reported it is developing sulphur removal methods. Algoma reports it is cutting its production capacity by 55 per cent.

All four corporations have reported officially that they will be able to meet pollution reduction requirements on schedule. Our government intends to hold them to that commitment. In each case, their SO₂ emissions last year were actually below the current legal limits, which were 685 kilotonnes for Inco, 370 for Hydro, 154 for Falconbridge and 180 for Algoma.

Ontario Hydro has been the subject of much discussion recently. A federal-provincial task force discussed the expanded use of low-sulphur, western Canadian coal as a way that Hydro could meet its Countdown Acid Rain requirements to halve its emissions by 1994.

This option contains some immediate economic benefits, such as increased interregional trade and job creation, but it is not a course of action devoid of problems. Environmentally concerned citizens in both Alberta and British Columbia are apprehensive about the potential impacts of increasing strip mining to meet Ontario Hydro's large coal requirements. They fear the damage to Canada's natural heritage and wildlife that could be wreaked by strip mining the Rocky Mountains. Another problem is that the cost to Hydro, and therefore to Ontario consumers, is estimated to be greater than that of meeting the limits by using US coal with scrubbers.

Much of the added expense of western Canadian coal is due to the high cost of transportation. Since the major haulers are federal organizations, it is well within the powers of our federal government to help reduce these costs, making western coal more attractive to Ontario Hydro. In the meantime, Hydro is developing various emission reduction scenarios and has made an application for an environmental assessment to examine the pros and cons of installing various kinds of scrubbers.

My concern, as Minister of the Environment, is that Hydro reduce its pollution. It is up to Hydro to pick the means to meet its environmental obligations. Like the other companies affected by Countdown Acid Rain, Hydro has until the end of next year to decide which are the most appropriate abatement measures for the long term.

The Countdown Acid Rain program is a major step forward for Ontario. But Countdown Acid Rain cannot in isolation protect Ontario's waterways, forests, wildlife and historical buildings from the ravages of acid rain.

Half of the acid deposition in Ontario comes from sources in the United States. Protection of Ontario requires a strong acid emission reduction law in the United States. Our efforts to convince our neighbours to pass such a law may be undermined if Canada lacks solidarity in its own abatement pact.

Nova Scotia has recently joined New Brunswick in its uncertainty in reaching an agreement with the federal government to clean up acid rain. It is up to the federal government to ensure that every province contributes its

share to the agreed-upon 50 per cent eastern Canada emissions reduction by 1994.

1020

Prime Minister Mulroney will need a united front behind him when he meets the US president in April. If Nova Scotia and New Brunswick persist in their current positions, Mr. Mulroney should call the Premiers of those two provinces in for consultations to straighten out these matters before meeting Mr. Reagan.

I wish the Prime Minister good luck at the summit, although I believe the envoy's report, with its reliance on co-operation from the Reagan administration, is a dead end. A high-ranking member of that administration, US Interior Secretary Hodel, recently reiterated his dismissal of our acid rain concerns as a conspiracy to sell electricity.

If any Canadians entertained the sort of deluded suspicions Mr. Hodel vents, they might be saying that US acid rain falling in Canada is a premeditated attempt to destroy our fish habitats and woodlands so that American lodge operators and woodcutters could make an extra dollar.

I wish the Prime Minister good luck, because Mr. Hodel is simply one of several one-watt bulbs in an administration that appears to be lacking in environmental enlightenment. Mr. Hodel's sophomoric conspiracy theory simply diverts attention from the truth about acid rain: that it is an environmental tragedy that is eating away at the natural and cultural resources of both Canada and the US.

Personally, I think that if we want to protect our environment from US acid rain, we must look to the US Congress and take our case directly to the American people. The American people and their legislators have a more balanced view of the world, one which respects the environment, which supports all life.

I recently spent a weekend in New York, talking to US anglers and hunters. Unlike the political power lobbies, these people have real concern for the environment. Many did not realize how much damage is being caused by acid rain or how much they stand to lose. They are prepared to push their government to do something before it is too late.

We need to reach more of these people, and in order to do so, Ontario will continue to take this issue south. We will do our utmost to widen public awareness of these problems and gain support from the Americans themselves. As I am sure you are aware, the knowledgeable environmental and public interest groups in Ontario are prepared to do the same.

Our government also intends to persevere with legal interventions. Yesterday, Ontario took its case to stop acid rain to the US Supreme Court. The legal details are as follows. Ontario petitioned the high court, requesting a review of the recent US Court of Appeal decision to reverse a lower court order. That court order would have required the US Environmental Protection Agency to set in motion steps to reduce acid rain emissions in seven states.

In July 1985, US Federal Court Judge Norma Holloway Johnson ordered the EPA to set in motion the necessary processes to reduce acid rain emissions in states which release the greatest amounts of sulphur dioxide. The EPA appealed

the court's judgement, questioning the role of the courts and the adequacy of the acid rain programs directed by judicial order. In September 1986, the US Court of Appeals for the District of Columbia reversed Judge Johnson's decision made under section 115 of the Clean Air Act.

Ontario rejects EPA's argument that more studies are needed before action may be taken to stop acid rain. We hope the Supreme Court will force the EPA to acknowledge its 1981 findings that acid rain presents a serious threat to the environments of both the US and Canada and take action.

We have decided to intervene in this case as part of our commitment to pursue all avenues to bring about resolution of the acid rain problem. Ontario's intervention is separate from a parallel effort being made by eight American states and four environmental groups. The fact that we are fighting this legal battle side by side with Americans underlines the fact that we have strong allies south of the border.

The American medical community shares our concern about acid rain. A few weeks ago, experts from major public health groups such as the Academy of Pediatrics and the American Lung Association stated that acid rain and the pollutants that cause it are a serious threat to human health, and especially to children. Testifying before a congressional panel, they appealed to their government to act now to curb acid rain, saying that, "The potential threat to human health is too significant to defer protective action until more scientific evidence has been accumulated."

Recently we heard about how acidification is killing off a variety of duck species. As Paul Hansen, the American author of that particular report points out, "We are changing the basic chemistry of eastern North America."

I am hopeful that, one way or another, we will soon see some acid rain abatement action in the United States.

The reality is that we cannot continue to use our air as a waste disposal system. There is overwhelming evidence of the damage caused by acid rain in every part of the ecosystem.

I would like to introduce to you now, Dr. David Balsillie, the assistant deputy minister of the environmental services division. He will be presenting the general briefing you requested and discussing the Countdown Acid Rain program. David will be to my left.

I would also like to introduce Wayne Scott of the acid precipitation in Ontario study office. He is here to act as a bridge between the committee and our ministry officials. He will arrange for appropriate staff members to attend future sessions or provide any resource materials that you may need.

Before I actually hand over the committee to Dr. Balsillie, with the permission of the chairman and members of the committee, I would like to reiterate that I look forward to the deliberations of this committee. I will be following, through members of my staff who will be in attendance, the various issues that are raised and the questions that are asked. We are at your disposal to provide any and all information that you would like to have. I will be pleased to come back to answer any questions that you will have at the conclusion of your deliberations, as I indicated in my initial remarks, at a time which is appropriate to both of us.

I apologize for having to depart from the early part of your

deliberations at this time. I must say that every 15 minutes there is a challenge to meet in the Ministry of the Environment, and I am about to meet one of those challenges. Thank you, very much.

I should note that the member for Parry Sound (Mr. Eves) and I had to meet a challenge last winter in his very riding.

Mr. Chairman: I think Mrs. Grier would like one very quick question.

Mrs. Grier: Is there any time for questions at all, or what is our schedule?

Mr. Chairman: I believe the minister has another engagement that he has to leave for, but he is willing to come back at a mutually acceptable time later in our proceedings.

Mrs. Grier: I think there are some general issues with respect to Countdown Acid Rain, which is the primary focus of this committee and, from a policy point of view, that I would certainly be interested in exploring with the minister; if not today, then if we could have some assurance of another hearing, that would be useful.

Hon. Mr. Bradley: Absolutely. I would be delighted to come back to explore all the issues you wish to explore and that all members of the committee wish to explore, providing the answers and to get input from you on any ways in which you believe we can improve.

Mr. Chairman: Just before you take leave, with respect to your comment about Mr. Hodel, I wonder if perhaps if we had 100 of those one-watt light bulbs, would that be a glimmer of light or would you prefer one 100-watt individual instead?

Hon. Mr. Bradley: I think one 100-watt--I know you said it in a light fashion, but one 100-watt bulb would be fine. I must say it is an opinion. It sounds perhaps disrespectful to an official of another country, but I am going to tell you it is an opinion which is held by our federal minister, who has expressed his genuine concern about those comments and about others in the federal Parliament who deal directly with the United States that in 1987 that kind of comment can still be made.

Mr. Chairman: Thank you.

Mrs. Grier: Will he be able to handle one question, or are we--

Mr. Chairman: I think the minister will be back before the committee at another opportunity.

Mrs. Marland: We will schedule it, will we?

Mr. Chairman: Yes, Mrs. Marland.

Mrs. Marland: Okay. Thank you.

Mr. Chairman: Dr. Balsillie, if I might turn the proceedings over to you; I believe you have a slide show presentation to present to the committee.

Dr. Balsillie: I do have a slide show and with your permission I would like to speak to the slides. I feel like as this would be acid rain 101

or everybody's primer to acid rain in order that we can provide a background to the members of the committee so that you are in a position to understand a number of the issues and to speak to them. We are also available for questions.

Following my presentation, there is a presentation by Carl Griffith, senior economist with the ministry, with regard to some of the economic aspects of acid rain. Both Mr. Griffith and I will be available for questions. I presume it is through till noon hour. Is that correct, Mr. Chairman? When did you want us to finish?

1030

Mr. Chairman: We have yourself and, I guess, Mr. Griffith on the board through till noon. Then I believe it is Mr. Scott and Dr. Dodge this afternoon.

Dr. Balsillie: Okay. With your permission, I will speak from the screen. Can I have the lights, please? I was told to say, "Can I have the lights," and they would disappear.

The first slide is one I am sure you have seen in many pictures, magazines, etc. This issue illustrates to a tremendous degree that acid rain is one of the pollutant problems which transcend both provincial and international boundaries and one we are going to have to work together with our neighbours to solve.

Just as a very quick schematic, you can see this is, in a nub, the acid rain situation. We have sources of sulphur dioxide and nitrogen oxides being emitted from smoke stacks or automobiles. We have the prevailing winds which carry the pollutants somewhere downstream. Atmospheric chemistry is occurring in this area. We can have either dry deposition to our water, forests and soils. We can have clouds forming, and then we can get sulphuric and nitric acid rain.

Studies done by the Ministry of the Environment in Ontario have shown that the sulphuric acid is leading to more of the acidification in our province than the nitric acid problem. I will speak to that more specifically later on. This is why the abatement program has been geared towards the reduction of sulphur dioxide emissions in Ontario; this is the product which is driving the acidification of our lakes.

Among the sources are the Inco smelter in Sudbury, the Algoma Ore division in Wawa, which sits on the northeast shore of Lake Superior, and automobiles in our urban centres, such as Toronto and the metropolitan area. More of the focus on the automobiles is on the nitrogen oxides. Starting this fall, the federal regulations will require new cars to have reduced levels of nitrogen oxides, carbon monoxide and hydrocarbons, to levels equal to those of the United States limits, so we are bringing down, through federal legislation, the emissions from automobiles in Canada.

In a schematic way, you can see that the large number of sources in the United States is in the Midwest or Mideast and that we have larger sources in Ontario, our power plants along the Great Lakes, Inco and Falconbridge in Algoma and Noranda in Quebec. What we have is a series of large emitting sources on the American side. We have some of our own sources, which we are seeking to control. These are emission sources. Then we look at the prevailing winds, and Ontario is downwind of a lot of these areas.

Looking at nitrogen oxides, we see the areas of metropolitan United States which also produce a large amount of nitrogen oxides, either from power plants or urban plumes, where automobiles are a major source.

In the Countdown Acid Rain program, which you have received, you will recognize this chart. These are the progressive reductions of sulphur emissions from the 1980 base case which we are looking to achieve by 1994. This will provide us, as the minister said, with a substantial reduction of acid gas emissions in this province, concentrating on sulphur dioxide.

What happens in the atmosphere then is that sulphur dioxide is emitted. As a gas, that sulphur dioxide can be deposited on vegetation, soils, buildings, etc. or it can undergo a number of chemical changes, either in the clouds or in the free air, and we can have dry deposition or wet precipitation out of the cloud. All precipitation is wet, of course, but we have precipitation coming out and we can have various forms of acid hitting the soil.

The nitrogen chemistry is more complex, and there are a number of things that go on and you have a number of different products. I do not put this slide up so you can remember all this but to show you that the nitrogen chemistry is very complex, there are a number of products, and in terms of trying to model these chemical reactions in a computer sense, it is very difficult and complex.

Once again, you can see that there are a number of dry components. I think there is a misunderstanding that it all stems from acid rain. A lot of the material is dry-deposited as well as that which comes down in the rain.

The crux of this matter, then, is the relationship between those source areas where acid gases are emitted and our sensitive receptors. I think an important term here is "sensitive," because not all areas are sensitive to acidic deposition. In terms of trying to determine where this material came from and where it is deposited, we have within the ministry a meteorological data acquisition system that allows us to put the weather data into a computer and helps us with our computer modelling.

We can get the weather maps, and we can backtrack material which has been deposited or material which is emitted; we can follow it forward to where it is deposited.

Looking at the North American continent for July, we see a lot of the tropical airstreams move up in this direction and bring American gases and materials, pollutants, into Ontario and pass over eastern Canada out into the ocean.

We do have other materials which come from cleaner areas to the west, and this little area down here seems to be isolated from us. Whenever there is a storm that comes up from the south, it comes up from the Gulf coast with moisture-laden air, it picks up the pollutants in this area and by day three it can deposit this material in Ontario.

What do we have? We have two ways of looking at these long-range transport phenomena. One is through tracer experiments, where we release a very unique compound in various areas, and we have done that in a study called CAPTEX, which is the acronym for cross-Appalachian tracer experiment. MATEX is an experiment that never got off the ground. It was called the massive aerometric tracer experiment. By the time they put all the parts together, it

was a \$150-million study and they decided it was not worth it.

The CAPTEX study was a release of chlorofluorohydrocarbons, and they were traced as the material was released from either Dayton, Ohio, or Sudbury, Ontario, as to where that material went. I will come back to this in a moment.

The second area is that we can use computer models to simulate where material which is emitted into the atmosphere travels and is deposited.

To come back to CAPTEX for the moment, material that was released in Dayton, Ohio, actually travelled in this direction, and you can see that, in fact, it did cross over in the Great Lakes area to a small degree, based on this incident. All the dots are the monitoring matrix, and you can see that 24 hours later the material was out over the eastern United States. So material released in Dayton, Ohio, travels in 24 hours across to the eastern seaboard.

There was a Sudbury release site, and as you would expect, material which was released in Sudbury travelled south and ended up in the Adirondack region of the US. We are not clean, and we cannot sit back on our laurels and say, "It is all coming from the US." In fact, in certain cases we are impinging on the United States, but we are getting more from the US than we are exporting. We have a balance-of-trade deficit.

We have also used a statistical model, which is a computer-developed model. It is a simple model in that it assumes long-term averages can be developed using 30-year meteorological cycles. It also assumes that a lot of the chemistry in the model is quite simple and that for every molecule of sulphur dioxide that goes up, we get a molecule of sulphates that come down in a linear fashion.

1040

What have we done with this model? We were able to calculate deposition and concentration at selected locations. If we want to say how much is coming down to Muskoka and from where, we can calculate it using the model. We can use it to develop patterns across the province or anywhere in eastern North America. We evaluate source-receptor relationships. If material comes out at one point, where is that material being deposited? Then we use the model to look at abatement scenarios. If we want to change emissions, what happens to the deposition? We can also evaluate for proposed new sources. If we want to put a new smelter somewhere or a new boiler or another large source of acidic gases in a given area, we can determine what the impact is going to be somewhere downstream. So, models are extremely useful.

In the memorandum of intent, which is described in your package of the US-Canada work that went on in the early 1980s, they compared eight statistical or simple models. For an Adirondack receptor, the states of Pennsylvania, Ohio, New York, Indiana, West Virginia, Michigan, Illinois and Kentucky were found to be the major source states which are depositing in the Adirondack area. The range of prediction is listed on this side of the chart. However, you can see in all cases the states came out in the same order. This is similar to what we have for an Ontario receptor where these six states are considered to be the major source areas for deposition from the US in Ontario.

One of the arguments against using statistical models is that they do not have complex chemistry, they do not have short-term meteorology, so we went to the development of what is called a Eulerian model. This is a complex model which requires a Cray super computer to run it. It can evince

calculations as opposed to using 30-year-average meteorology and it is complex from transport and dispersion, chemical transformation, dry scavaging, wet scavaging, subgrade scale chemistry, since the grids are 127 kilometres on each side. We needed subgrade scale chemistry in it. It is 12 layers in vertical and the grid size is 127 kilometres. This model is under development in conjunction with our federal friends at atmospheric environment service and in co-operation with the West Germans because they have a similar need for such a model. The US also has a model similar to ours under development and we are hoping to have a field study some time in the next two years in order to get data against which to evaluate this complex model.

We have emissions, we have chemistry in the air, we have transport and we now turn to deposition. The Ministry of the Environment has both wet and dry deposition monitors spread across the province. These are examples of the types of monitors that we use in order to collect our data. This is a wet sampler and this lid covers this bucket until it starts to rain. When it starts to rain there is a sensor which causes this roof to be transported over to this side. We used to collect dry deposition on the other side when it was not raining, but this gave us erroneous results because it was not an efficient collector. This opens when it rains and closes when it stops raining. It keeps the sample free of contamination during the dry period.

We have 28-day collectors which put us in synchronization with those sample collections in the United States and we also have daily collections at a number of sites in order to get episodic information. At some of our research sites we have a number of different types of collectors. When measuring snow we found we had to lengthen the collector because any currents would suck the snow straight out of the bucket and we would lose part of the sample. This is the sensor for measuring the deposition of the precipitation. When this gets wet it opens and a sample is collected in this side. There are a number of other types of collectors around. This is our site at Dorset.

This is a boom which we use for collecting dry samples. In order to get the dry deposition, we actually measure the concentration of these chemicals in the air and multiply them by what is known as the vertical velocity in order to determine the amount that is being deposited at any point. As you may be able to see, this boom has a number of hoses coming down to the little house here. We have a vacuum in here, a pump, which, on a daily basis, sucks air through a series of filter packs and then through the pump. The samples are collected on a series of filters which are held in these filter packs. By measuring the low concentrations of these various pollutants, we are able to multiply them by the vertical velocity and determine the deposition.

I mentioned before the words "sensitive receptor areas." You can see that in Ontario, the southern portion of the province is not considered to be sensitive. That is because of the soil type and the buffering capacity that is in those soils. As the acid hits those soils, they are still able to buffer that acidity to neutralize it to an adequate degree. However, when you hit the Canadian Shield--most of eastern Canada, northwestern Ontario up into the midwestern provinces and down into the midwestern states where we have a granitic bedrock--we have exposed rock and very little soils. The soils are acidic to some degree to begin with. There is very little buffering capacity. This is where we are experiencing our difficulties.

If we look at our deposition patterns, this is wet deposition. You can see that in southern Ontario, we are getting 35 to 40 kilograms per hectare per year of wet sulphate deposition. We have determined that 20 would be a good target loading to protect all but the most sensitive areas. On the other

hand, Minnesota is now looking at using 11 as a more sensible number, and we may be in the process of looking at changing our number from 20 to somewhat lower in order to protect our more sensitive areas.

However, once you get into this area in central Ontario, you see that we still have somewhere above 20 until you get up into this area, and north and west of it. You still have more than 20 kilograms per hectare of wet sulphate deposition. These are certainly areas we are extremely concerned about because they are very sensitive and the deposition is still too high.

Mr. South: When you are quoting these figures, over what period of time are you measuring this deposit?

Dr. Balsillie: That is the annual deposition based on monthly samples or 28-day samples.

The numbers on this are too small for you to see, but all I want to show you is that the dry deposition pattern is similar. We have a similar high deposition level in southwestern Ontario and into southern central Ontario, but when we get in here, we still have high levels of deposition which do not decrease until we get up into northern and northwestern Ontario. The combined wet and dry are giving us considerable concern.

These are the types of areas that we are trying to preserve. They are forested. There are shallow soils. There are lakes which are sitting down in low areas. These are the areas we are studying in central Ontario. These are the kinds of recreational opportunities for fishing, swimming, etc., that we are trying to preserve. These are the kinds of places Ontario is proud of. We are selling in other areas so that we can attract visitors.

This is a new booklet, and Mr. Scott has copies of it to give out to the members. While I have a bright slide on, I will read the numbers to you. This is a study of acid sensitivity in lakes in Ontario. We have measured over 6,000 lakes; 244 of them are already acidic. I will show you the slide in a moment. Another 934 are extremely sensitive, 2,312 are sensitive and 1,031 have low sensitivity. It is also considered that about 1,500 of those lakes we looked at are not going to be sensitive to acid deposition.

1050

This is the cluster of lakes we have looked at from over 6,000 lakes across this area. If we can just concentrate on southern Ontario, you can see that the blue dots are those lakes which are not considered to be sensitive. However, you can see this cluster of yellow and a few red lakes, and some in here, which are considered to be sensitive or acidic. The red ones are acidic; the yellow ones are sensitive. The cutoff line of 20 kilograms per hectare is in this area. We still have between 20 and 30 kilograms with sulphate deposition in this area, an extremely sensitive zone.

We are looking at mass balances of watersheds, and to do this we have to put in weirs in order to measure all the flow into a lake and all the flow out of a lake. We dam up the creeks that are going in. We know exactly how much water can pass through here with a given amount of height in a measuring well, which is in this hut in this area.

By measuring the amount of flow and the chemistry, we know how much sulphate and how much acidity is going into a lake, and we can measure how much is going out at the other end. Therefore, we can calibrate our

watersheds. We do this year round. We have had a picture taken in the winter. You can see the construction is such that it is calibrated, so we know exactly how much water passes through that weir with a given height in the measuring well.

We are concerned about loss of our fish species, especially trout and salmon, which are the most sensitive types. We are concerned about the loss of amphibian life. This is a picture of a crayfish. You will notice there are a series of egg pouches. Crayfish are one of the sensitive species. You can see that in acid-stressed lakes the numbers of eggs which are being produced by these crayfish are extremely reduced and, in fact, two species of crayfish have been found to be deficient now in acid-stressed lakes in the Dorset area.

This picture is taken from a lake in the Killarney area. What we have done in this area is to make some areas for fish to live in a buffered microclimate. We put limestone in these boxes, we put a fish trap over the top and we hold the fish over these boxes. The eggs hatch, and we get the small fry out of these hatcheries. The fish are able to survive in the microclimate around those boxes where limestone is available to buffer the acidic water.

As you can see, this lake in Killarney Park is extremely clear. There is very little or no life in that lake, but if you add limestone and put in the eggs, the fish will survive.

One of the major problems we have is that the acid may not be evenly distributed. This is a picture indicating spring runoff. From this graph, you can see that this is the flow which would go through one of those weirs in a very short time, between April and May. You can see that because of the buildup of acidic material in the snow. In the snow packed over the winter, you get a very large release of acidic material into that lake at a period which is critical to the fish's life, the hatch period and the fry stage. With this large influx of a lot of water at low pH, you have a period which may not be a problem for the rest of the year, but which can help to deplete the fish population during the critical stage.

Some things disappear when you have acid lakes; other things appear. This is one of the things which appears. This filament is algae. We commonly call it elephant snot. The reason is that when you put your hand in to lift this up it is a gooey, miserable thing which prevents swimming and enjoyment of the lake. It also precludes the opportunity for other species and organisms to live in that ecological niche. Why do we not go around and just drop limestone into all the lakes? If this is somebody's acid tummy and we put in a load of Tums, we could give some relief here and bring it back to a pH at which fish and other organisms could survive.

There are a couple of problems with this. We have watched what went on very closely in Sweden, and one thing is that with continued deposition, the lake will eventually acidify, whether it is two, three, four or five years later. The other thing is that if you are looking at putting the material into the streams, as they do in Sweden, if you miss that spring melt break by one or two days, you could wipe out the population anyway and still have done all your work.

More important, you have a lake and stream that are now different. It is not the same chemistry, it is not the same lifespan and it is not a solution to the acid rain problem. What we think should be done is to go to abatement, stop the acid deposition and keep the natural ecology of these lakes. We have done a number of lakes on an experimental basis and we are into a five-year program of monitoring how those lakes respond in a limited way.

I want to spend a few moments on terrestrial impacts, because not everything impacts directly on the lake. We have looked at a large number of base-line soil sites across the southern and central part of the province up to the North Bay, Sudbury area. At each of these sites, we have dug soil pits, marked the horizons, taken samples for chemical analysis at all these horizons within the soil, and we have recorded them so that later on, in five and 10 years, we can go back and see whether there has been any change in those particular soils across the province.

We also collected vegetation. This gentleman has a pole-pruner. He is collecting vegetation from up in the crown of the tree for chemical analysis. We also have, in Brampton, a clean air greenhouse where we grow plants in purified air that is filtered before it goes into the greenhouse. We test the various plants with acid-rain-type solutions. These are 30-foot-high chambers. The simulated acid rain is put in at the top. The reason they are 30 feet high is that the droplets reach what we call terminal velocity by the time they reach the plants, similar to the way rain falls onto the plants.

We cover the soil on the plants so we do not get a soil effect. We measure the total amounts of material we add to those plants, and then we look at the damages that occur to those plants. We also have an outside area that is called an exclusion canopy. We plant various crops in this area. When it rains, these plastic sheets come down the tracks and cover the plants, and then we spray the plants with our own acid rain solution. You can see these ducts that are here. If we want to, we can blow various and sundry gases such as sulphur dioxide or ozone into this plant area so we can see the interactions between gaseous pollutants and the acidic precipitation.

In the field, we have put up towers to measure the rain at the top of the tree canopy. We collect the rain that falls through the canopy, which is called through-fall, and we collect the rain that runs down the trunk, called the stem flow. We collect it by putting tubing around the trunk and putting it into a large garbage can.

We also want to find out the impact of the forest canopy on the rain. We collect the litter fall and do a chemical analysis on that. We then follow the water as it moves through the soil by placing collectors down in the soil and replacing the soil over them. Then, as the water percolates down through the soil, it is collected in lysimeters and sucked out and into sample collection bottles for chemical analysis. We get a total bio-geochemical look at what happens to the rain as it hits the canopy, goes down through the soil, works its way through the ground water and into the lakes.

1100

A subject that has been on everybody's mind is maple dieback, especially in central Ontario where syrup is produced. This is a slide showing typical symptoms and the reason it is called "dieback" is that the crown dies back from the top and dies in from the outside extremities of these branches. There was a lot of this dieback in central Ontario and it is very prevalent in the eastern townships of Quebec. We did extensive work on it in Ontario, where we have taken cores of these trees and measured the growth patterns over the last several years.

We cut down some of the trees, measured the growth rings and dug out and followed roots to their extremities. We found, since there is a large amount of acidic precipitation falling in these areas, that in addition to stresses such as root diseases, caterpillar damage or other activities such as

droughts, the acidic precipitation was an additional stress on these trees and a lot of them are suffering this dieback disease.

We are now looking at the degree and extent of hardwood damage to the trees across this province to determine how much actually is going on and what are the relationships between acid deposition and the maple dieback problem.

One of the other things we are worried about is material damage to buildings we dearly love here in Ontario, such as the one we are in. There is also damage to the statuary that cannot be replaced which is going on in these areas, where we have acidic materials etching away at the stone work. In Ontario, we are actually doing very little in this area, but the federal government is involved in some studies and we are also looking at some studies that are going on in other jurisdictions.

Finally, the minister mentioned some health studies. The Department of National Health and Welfare is working in Ontario, especially with children. If you take a picture of a child in a test, you have to have a release for it because there have been so many children abducted in various cases nowadays that you have to have special permission to use a child's picture.

These tests measure the lung function, especially of asthmatic children, when they are in an area which has high sulphates and ozones, which are two of the common elements or pollutants associated with precursors to acid rain. It has been found in some of the work that has been done in Ontario, in association with the Harvard University school of medicine, that children who have a previous history of asthma or lung function problems also suffer increased lung function problems when there are high episodes of these pollutants.

That is the end of my talk. I hope that the day will come when we will be happy to go back out and play in the rain. Thank you very much.

Mr. Chairman: That presentation is extremely interesting and informative. I wonder if you have a hard copy of the text portion of your slides which you might be able to make available to the committee.

Dr. Balsillie: I do not have it here.

Mr. Chairman: At a future date.

Dr. Balsillie: Okay, I will do that.

Mr. Chairman: Thank you very much.

Dr. Balsillie: Do you wish me to answer questions now, or did you want to proceed with Mr. Griffith and then we would do this again?

Mr. Chairman: I will leave that to the committee. Would you like to hear the rest of the presentation this morning from the ministry or to ask questions?

Mrs. Grier: Could we have questions on the specifics of those?

Mr. Chairman: You certainly can.

Mrs. Grier: I was particularly interested in the end bit and the health studies that have been done. Do I take it from what you said that most

of those are federal studies, or are you doing anything with respect to epidemiological research?

Dr. Balsillie: No, we in the province are not doing work. We have co-operation between ourselves and the federal government, the Department of National Health and Welfare. We provide assistance in the monitoring of the pollutants, weather conditions, where the material came from, etc. National Health and Welfare, in co-operation with the Harvard University school of medicine, is actually doing the medical portion of that work. Dr. Claire Franklin is co-ordinating those projects.

Mrs. Grier: To your knowledge, is the Ministry of Health doing anything along those lines or is the National Health and Welfare the only agency involved in those kinds of studies?

Dr. Balsillie: I think National Health and Welfare is the only one involved in this study.

Mr. Scott: They are the only ones involved in the active research. The Ontario Health people sit on the steering committees and provide input in terms of collecting other data within the province.

Mrs. Grier: I raise it because obviously your presentation has been extensive. There is a long history of work on the aquatic environment, the forests and the buildings damaged by acid rain. I am wondering whether in fact sufficient work is being done on the effects on humans and whether that is an area where you feel more resources ought to be placed?

Dr. Balsillie: I think that is partially because of the history. We discovered the acidic problem as it related to the aquatic environment and started to work with that. We then discovered there was something going wrong with the trees in our jurisdiction. We feel there should be some further work done. By whom and in what way it should be done has to be worked out, because there are resources which can be made available to us if we can work together with groups such as National Health and Welfare, the United States or whatever. Then we can get the best work done by the best people.

I think one of the things which would be key to the US changing its mind is, if you would like to put it that way, would be if this could be linked to a health problem. To date, the linkage has been less than tight, but now we are starting to gather that data. It takes a long time. Epidemiological studies take a considerable amount of time and effort to put together, and to get what is conclusive evidence that these acid rain--

would like to stress that it is more the acid rain precursors like the sulphates, the fine sulphate aerosol particulates, in combination with ozone, which travels with that same air mass, that cause the respiratory problems. It is not actually the rain causing the health problem. You have to breathe in something. You do not breathe in rain obviously. It is these fine particulates, acid aerosols in combination with ozone, which cause these lung dysfunctions.

Mr. Chairman: Perhaps when our scheduling committee or indeed the committee considers scheduling, it might want to consider hearing from Dr. Franklin or Paul Hansen with respect to wildlife, that kind of resource.

Mr. G. I. Miller: How closely are you working with, and could improvements be made in working with, other ministries like the Ministry of Agriculture and Food? Is there a co-ordinated program among the Ministry of

the Environment, the Ministry of Agriculture and Food and the Ministry of Natural Resources?

Dr. Balsillie: Yes.

Mr. G. I. Miller: I think there are two key ministries. Agriculture is affected. It is where we produce our food, and very important effects from the environment have a great influence on the industry.

Dr. Balsillie: The way the acid rain program is structured is that we have a number of working groups, an aquatic effects working group, a terrestrial effects working group, etc. Both the Ministry of Natural Resources and the Ministry of Agriculture and Food are involved in program development at that stage, so any program we have includes input from the ministries of Agriculture and Food and Natural Resources on the terrestrial and fisheries sides.

I believe Dr. Dodge is coming this afternoon to talk about some of the MNR programs as they relate to the fisheries side. You can be assured that all the ministries are working together as part of a co-ordinated acid rain program and, in fact, the Ministry of Natural Resources is represented on our acid rain steering committee, which looks at all the programs and budgets and what should be stressed.

1110

Mr. G. I. Miller: Is anybody from the Ministry of Agriculture and Food on that committee?

Dr. Balsillie: Not on the steering committee; they are involved at the effects working group level.

Mr. Wiseman: On one of your charts, you showed how many hot spots there are south of the border, compared to four major ones in Ontario. As you said, we are sending some emissions down to them, but one of the charts showed that in about two or three days, if the prevailing winds are such, we get a lot of their fallout on us. Have you determined how much we are actually getting from them, compared to what we are sending down there?

I am thinking of the minister's statement before he left, when he said that we were going to reduce ours by 60 per cent, 10 per cent more than Keith Norton suggested when he was minister. Are they monitoring the plants that are being built down there, so they will not be emitting the same as they have in the past, or are they just building plants and we are getting more every year as we try to cut back up here?

Dr. Balsillie: There are a number of questions there.

Mr. Wiseman: I know.

Dr. Balsillie: First of all, we estimate that, on average, about 50 per cent of the material which falls on Ontario comes from the United States and 50 per cent of it is our own. We are going to cut our own by 60 per cent, which will considerably reduce the amount which is falling on Ontario. But even if we were to shut down Ontario completely, in some of our sensitive areas, we would still have 20 kilograms per hectare of wet sulphate deposition per year.

On the reverse side, we calculate, using our computer model, that approximately 10 per cent of the material which is being deposited in New England and the Adirondacks area comes from Ontario sources.

Mr. Wiseman: So even if we cut out all of ours--the four major components of acid rain--we would still be at a level that you think is too high for us in Ontario.

Dr. Balsillie: That is correct. We still have concern that 20 kilograms is too high.

Mr. Wiseman: You mentioned one state, I believe--

Dr. Balsillie: Minnesota.

Mr. Wiseman: --that has cut theirs to 11.

Dr. Balsillie: That is correct.

Mr. Wiseman: I think it is very important that we get the United States to cut its emissions. Is the United States, in its new plants, making sure they are not giving off the gases at the same rate as the old ones?

Dr. Balsillie: The problem we have with the United States is that it has a large number of coal-fired power plants which are historical power plants. Through the Clean Air Act, they have new source performance standards which they have to meet, so the new plants are not a problem compared to the old plants. It is the large number of coal-fired power plants--they were indicated on the map--which are producing large amounts of sulphur dioxide, and we just happen to be downwind.

One of the solutions the Americans sometimes put forward is that they believe the problem is there, but they do not believe it is as bad as we put forward. We want a cleanup in 10 to 15 years. They say: "Why do you not wait 35 to 50 years? All our old plants will be phased out, and we will have all our new modern plants in." We say: "That is not good enough, thank you. We want it cleaned up in the next 10 to 15 years, because we do not want to put our sensitive lakes at risk."

Mr. Wiseman: With regard to the 60 per cent we hope to be down to in 1994, the 50 per cent the former government put on and the time frame for that extra 10 per cent, was that 50 per cent not sooner in the agreement Keith Norton entered into?

Dr. Balsillie: I was not involved in those talks, but I believe it was a 1980 to 1990 time frame at the time that agreement was reached, I believe in Fredericton, some time ago when Mr. Norton was the minister.

Mr. Wiseman: The previous government had a commitment for 1990, so the extra 10 per cent has taken four years further to accomplish.

Dr. Balsillie: I do not think it is looked at in sort of that extra 10 per cent.

Mr. Wiseman: The fellow behind you is shaking his head no--I think it is no.

Dr. Balsillie: I cannot see my confrère in behind. That was not

necessarily considered. We counted forward from the time we put the regulations on, and we needed 10 years in order to do the studies, do the implementation and have them up and running in time to meet the 1994 deadline.

Mr. Wiseman: From the minister's statement it would appear that we are tougher now than we were before, but I am just wondering whether we really may not be, because it has taken a further four years to achieve a 10 per cent reduction.

Dr. Balsillie: I think the move to absorb some of the extra was a move on the minister's part and the government's part to absorb some of the unaccounted-for reductions in the eastern Canada agreement between the various provinces, and Ontario was to take a lead and absorb some of that extra reduction which had not been assigned to various provinces at the time of the February 1985 agreement.

Mr. Wiseman: But that was to be achieved by 1990; is that not what you said?

Dr. Balsillie: No, the agreement which was agreed to for 1990 was achieved earlier. It was worked out earlier by the various provinces at a meeting in Fredericton. I forget the date; I was not part of that group. That was some time earlier on in the 1980s, 1981 or 1982; sorry, 1983.

Mr. Wiseman: But that was the 50 per cent by 1990.

Dr. Balsillie: That is correct.

Mr. Wiseman: I have to ask the chap behind you, because he keeps shaking his head no or yes. I do not know. He must be one of the minister's officials.

Mr. Partington: We have this Countdown Acid Rain program in Ontario to reduce acid rain by a specific date. Is there such a thrust in the American states? Have they targeted a period of time by which they are going to substantially reduce acid rain?

Dr. Balsillie: It depends from state to state, and it depends on which ones are the receptors and which ones are the emitters. For the most part, the emitters have not committed themselves to a reduction program. Other states, such as Michigan, New York and Minnesota, which are downwind and are receivers have committed themselves, as we have, to acid rain reduction programs or acid gas emission reduction programs. They have done that so that they can be in a similar negotiating position as we are now in and be able to say, for instance, "Okay, in Minnesota we are going to reduce our acid gas emissions." Therefore, they can go back to Illinois, Indiana, West Virginia and Kentucky and say, "We need you to reduce yours because you are cutting our soybean crop by 20 per cent," or, "You are impacting on our northern canoe lakes and the boundary waters canoe area to the detriment of our wellbeing."

Mr. Partington: I noticed from one of your slides that apart from the obvious effect that it appeared acid rain would have on health and buildings and other matters like that, it appears that the area affected in Canada is substantially greater than that in the United States, so there may be a greater threat to the environment and the natural wildlife in Canada than there is in the United States. Is that true?

Dr. Balsillie: I think your perception is partly correct, but there

are a number of sensitive areas in the United States also. As you saw from the map, the Northeast, including the New England states, is in that sensitive area. The Appalachian area is one of the sensitive areas, and now it is turning out that parts of Florida are also showing up as being sensitive, and they are getting reactions.

I think we have a vast area that is sensitive, but we have to be careful. We have certain areas where we have high deposition that are sensitive. We have portions of northwestern Ontario where we have high sensitivity but we have considerably lower deposition. We have in the neighbourhood of 10 or 12 kilograms per hectare of wet sulphate deposition per year. It is that combination of deposition and sensitivity that is important to put together.

Mr. Chairman: Thank you, Mr. Partington. I am going to have Mrs. Marland next, and then perhaps we could proceed with Mr. Griffith and then any further questions which might flow from that. I have one question myself before Mrs. Marland, however, if I might.

It comes to mind the relationship which you are trying to assess between the sources and the sensitive receptors with respect to our initiatives here in Ontario of course become clouded somewhat with the emissions from below the border. I suspect that perhaps your modelling techniques, computer modelling, could take that into consideration.

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I wonder perhaps for the committee's benefit when you are coming back before the committee again if you might be able to provide us, by way of your computer modelling, with some information as to what the levels of reductions we are trying to achieve mean as far as the deposition on our sensitive receptors are concerned, with what we know is happening from south of the border.

Dr. Balsillie: In this part of your package, your handout, on page 10 there is what we have estimated to be the deposition impact of wet sulphate at Muskoka in kilograms per hectare per year. The 1980 base case would be somewhat in excess of 30 kilograms. It would be 32. With the 60 per cent reduction that we are going to implement, we are predicting with those alone, without any US changes, we would be down to 27.6.

Mr. Chairman: What we would like are some various scenarios modelled for us.

Dr. Balsillie: Okay. I am not trying to be sticky here, but there are so many scenarios. We have computer printouts full of scenarios. What I would like to do, and I will run any scenario you want with a run or bring those results--I think if you could give us some time after, either through the secretary to Wayne Scott, if you could let us know what sort of scenario you would like to see, I can bring those results back for you.

Mr. Chairman: What we will do if I might, is have our researcher, David Neufeld, get in touch with Wayne Scott to work out what kind of scenarios we might like to look at.

Mrs. Marland: May I say at the outset I am really impressed with the presentation this morning. It is obviously very comprehensive but it was an excellent introduction. For those of us who have been involved in this subject

for the last decade and perhaps obviously by comparison to our ministry staff in a very peripheral way, that is the best presentation I have ever seen. I really enjoyed it.

One question about the coal-fired plants in the United States. I know they have a brand new one on the south shore of Lake Ontario right opposite our Darlington plant. I think that opened in the past year. I wondered, with a brand-new coal-fired plant, this is a hydro plant, whether they have become sophisticated enough to where they have eliminated the problems with a brand-new technology.

Dr. Balsillie: I do not have the specifics on that particular plant. It is something we could follow up on in terms of that particular plant. The US now has, as I mentioned before, a new source performance standard where they have to emit a given number of--it is something like one pound of sulphur dioxide for so many pounds of coal that goes into the system. In order to achieve that they would have to put some sort of scrubbing mechanism on back end of any new power plant.

As I said before, it is the historical plants with which we have the problem. The new ones for the most part, as far as I know, are meeting the new source performance standards but we can look into that when we come back with some particulars on it for you.

Mrs. Marland: I have two other fairly brief questions. When you look at the political situation in the US, and I am just thinking now on page 9 of the minister's presentation this morning, it is heartbreaking to think that the US Environmental Protection Agency, which by its very name speaks for its mandate, is refusing to acknowledge its own 1981 findings, as it says here, or its conclusions about acid rain and the serious threat that it is in both the US and Canada.

Since very often it is at your level that you get the feeling for what is going on, staff to staff, do you have any comment to make as to why the EPA in the US is actually contradicting its own mandate on that one area alone?

Dr. Balsillie: It is not easy for staff to talk about politics. On the other hand, when we meet with people at the working level, we meet with the modellers, we meet with the people who are monitoring deposition. I think numerous reports which have been published in the US indicate there is a problem and I think a number of people within the EPA, if you were to corner them quietly somewhere, would tell you, "Yes, there is a problem."

That is different from the mandate of the EPA and how it is allowed to carry out that mandate. When Mr. Ruckelshaus was the administrator of EPA, he came forward with a proposal. We did find certain things that were attractive in that proposal. Targeted reductions in a given number of states would give us the kind of protection we need and would give the northeastern US the kind of protection it needs.

The politics dictate otherwise, in that it is a regional problem. The receivers are over here; the polluters are over here. Who is going to pay? Is this a national thing with 52 states and 48 land-based states? Should those people who are living in nonsensitive areas have to pay for something that is happening in sensitive areas? There are a lot of coal miners and heavy lobbies for coal miners in the US. All these things have come together, so far, to thwart any major reduction in emissions of SO₂ from coal-fired power plants.

Mrs. Marland: So it comes down to the raw, crass fact of economics?

Dr. Balsillie: Economics and politics. I think the science is there. There have been enough accredited reports that indicate the science is there. It comes down to economics and politics and regional problems and disparities.

Mrs. Marland: When we had our organizational meeting, I said that we had the facts, and as I understood it, we had the technology, so it is a matter of making the hard decisions. Is there any report available that deals directly with the economic costs on both sides, in ball-park figures?

Dr. Balsillie: Mr. Griffith is going to spend about 15 minutes on a presentation on economics. Maybe you could ask him that question at the end of his presentation.

Mrs. Marland: And you have it from the US? That is what I was wondering.

Mr. Griffith: We certainly have ball-park figures from the US, yes.

Mrs. Marland: Okay. Thank you.

Mr. Wiseman: As a supplementary which flows from my colleague's question, we have heard a lot in the past few days and weeks about buying hard coal from Alberta versus the soft coal, I guess, we are getting from Pennsylvania. Have you been asked or have you checked into how much we would reduce our emissions right away without putting on the scrubbers and so on if we changed over and if it were possible to change over right away? Would it be 10 per cent? Would it be 15 per cent?

Dr. Balsillie: It is not quite that straightforward and that simple. I believe people from Ontario Hydro will be appearing, and you might want to ask them the same question. I can give you an introductory answer.

The regulation states that they have to meet certain emission limits by certain times, as per your countdown package. As the minister said this morning, how they meet that regulation is Hydro's business. If they want to switch to low-sulphur western coal, that is one option. If they want to go to limestone injection of higher-sulphur coals, then that is another option that is there.

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There are several problems associated with the low-sulphur coals from the west, but anything can be done if you want to do it. There are transportation problems. You have to bring the coal to the lake head, you have to build a larger rail system, and all those things.

Mr. Wiseman: I realize that. The minister mentioned it. Leaving the costs out of it, have you done any surveys yet or have you determined how much less would be going into the atmosphere if they were to change over?

Dr. Balsillie: It would be similar.

Mr. Wiseman: I just know the difference between soft coal and hard coal. There is an awful difference in that.

Dr. Balsillie: The final emission rate would be similar because you

trade off scrubbing for low-sulphur coal. In other words, they would still be required to meet the same emission rate by 1994 no matter what kind of coal they used.

Mr. Wiseman: My thought was perhaps they could get even lower if they have already committed themselves to the scrubbers. It seems to me that a lot of them have committed themselves to scrubbers. I know you fellows are concerned about the atmosphere and want to cut from 20 to something lower, like the state in the United States, to maybe 11. You could cut it even further by putting on the scrubbers and going to the other coal.

Dr. Balsillie: Do you want to do the two of them together? Do you mean you want to put scrubbers on low-sulphur coal?

Mr. Wiseman: I wondered if you wanted to get down further than what you are talking now.

Dr. Balsillie: One of the difficulties with that is in order to put scrubbers on, you need a reasonable strength of sulphur-dioxide gas. If you use a low-sulphur coal, there is very little gain from putting scrubbers on the back end because the gas rate is not high enough.

Mr. Wiseman: I take it that at this time you have not done a study on what they could cut it to if they burnt this other coal instead of what they are putting in the furnace now.

Mr. Scott: Those numbers are in the clean coal task force report. I can get copies of that report for the committee with all the detailed calculations.

Mr. Wiseman: It would be interesting to know.

Mrs. Grier: (Inaudible) Hydro in great detail, I hope.

Mr. Chairman: Yes, Mrs. Grier.

Mr. Wiseman, I was just going to mention that indeed we have asked the four companies that have been asked to cut back on their emissions to come before us. Unfortunately, we have just received correspondence from one of the companies, Algoma. They indicate that they do not think it would be useful or necessary to appear before us. When we talk this afternoon about scheduling, I will ask the committee to consider just how important it is for us to have Algoma before us. Certainly, the other companies will be here and we can ask those questions of them.

Dr. Balsillie: I have been handed a note with regard to Mrs. Marland's question. The plant is called Somerset and it does have a flue gas scrubber on it.

Mr. Chairman: Can we proceed to Mr. Griffith now?

Mr. Griffith: First, I would like to thank the committee for providing this opportunity for the ministry to come down here.

Mr. Chairman: Mr. Griffith, you need the microphone on so we can pick you up. You are going to be not only on Hansard but also on TV.

Mrs. Marland: That makes you feel better, does it not?

Mr. Griffith: It certainly does.

Interjection: You can get copies of the transcript.

Interjection: All of Ontario is watching you.

Mr. Griffith: Is that better?

Mr. Chairman: That is fine. Thank you.

Mr. Griffith: Again, I would just like to thank the committee for this opportunity to come down here and share with you some of our efforts in trying to understand the economics that surround this environmental problem.

My presentation will be brief, and that is not in any way to be interpreted that our effort has been minimal in this area. I have tried to focus on the highlights of what we have done, knowing that you will be hearing presentations from companies which, I am sure, will get into the costs in much more detail than I will. I also know that if you have any questions, the ministry or I can provide you with much more detailed information. I hope you will find some of what I have to say today stimulating and new.

Could I have the lights turned down, please?

Our economic program falls into three main areas. We have looked at the benefits of control, or conversely, the cost of doing nothing; the cost of control; and who pays the cost of control. I might add that we launched this program back in the late 1970s, recognizing at that time that sooner or later the economics was going to become a fairly important issue in negotiations and in developing strategies and trying to identify abatement strategies. To the credit of our ministry, jurisdictions are just now starting to put together an environmental program and are coming to Ontario and trying to tap our expertise in this area, as they have on the science side as well.

What are the physical damages from acid rain? Although the science has progressed tremendously, we are not at a point yet where we can say that in these areas where we have identified damages, forestry, agriculture, tourism, commercial fish, we can actually point to, say, this number or that part of the resource sector as being damaged. What we can point out, and we did earlier on, is that the various sectors that have been highlighted as receiving damage or being damaged by acidic precipitation are very important in terms of their dollar value to this province.

That certainly indicates that we should start paying attention to what those damages are because even minor per cent damages can be translated into fairly high dollar values of revenues for this province. The buildings and materials have a question mark. There is not really a revenue associated with them, but there is a potential damage to historical and cultural artefacts and to new buildings which actually would generate some type of economic activity because they would have to be replaced sooner than they would otherwise.

One area where we have much better information in terms of the damage side is the aquatic-based tourism. What this slide tries to indicate is the relationship between the various stages from the acidic precipitation to a change in the resource base to a change in human use. That is then translated into the economic importance, whether it be expenditures or jobs. That, essentially, is the framework which we, as economists, impose on this environmental issue, to try to understand the economic implications.

We undertook a study several years ago in which we estimated that, right now, in the most acid-sensitive areas in the province, acidified lakes have reduced sports-fishing expenditure only by approximately \$4 million a year. We then did some crystal-ball gazing, some what-if scenario. What happens if fish populations decline by four per cent because of acidic precipitation? The loss of expenditures in these acid-sensitive regions jumps up to \$21 million.

This is an estimate, but it is starting to show the importance of damages to one particular resource base in one part of the province. There is a 20 per cent decline in fish population. We are talking fairly large numbers now, of \$70 million a year to certain parts of the province, and the import of that is magnified when you look at it regionally. These numbers are estimates and just provide an indication that if these damages are occurring, it really does not take much to start bumping up their economic importance.

We also did what we refer to as an amenity value survey. We went out and asked people in the province what they might be willing to pay to prevent acidic deposition or the damages that the scientists were telling us were occurring from acidic deposition. We found that most people would be willing to pay more money either through higher taxes or prices to control acid rain.

It is important to point out that when this study was done in the early 1980s, that was at the height of the recession and the unemployment levels were much higher. The rather depressed feeling about the economy was very high at that time; yet most people said they would be willing to pay some money in some form to prevent acidic deposition.

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It is also interesting to point out in this survey that we surveyed people who actually participated in recreational activities in our most sensitive areas and people who did not, and even the people who did not participate would be willing to pay something to prevent any future damage from acidic precipitation.

What this amenity value is getting at is that we cannot just look at the market values of the resources that are being damaged. There is a real experiential value which the people of Ontario place on the protection of their environment, whether they use it or not. That has to be rolled into when we look at the benefits of controlling, for the cost of doing nothing is this loss that the people of Ontario feel. As economists, we try to translate that into some monetary value.

In regard to the costs of abatement, an old economic adage is that there is no such thing as a free lunch and, indeed, some of them are much more expensive than others. Several years ago, we started to try to get an estimate on what it might cost our companies to begin to reduce. This is simply an illustration of the costs. These capital costs are present-value numbers, and there have been some financial manipulations involved in them, but they do point out that a couple of years ago the costs were quite high. They remain quite high.

As Wayne Scott will be discussing with you this afternoon, as part of our Countdown Acid Rain process, companies are now having to identify exactly how they will meet the regulatory requirements and what the associated costs will be, but we wanted to start to look at and try to put together the order of magnitude of the costs we were talking because we felt it would be high. In developing a strategy, if we can partially identify what the gains will be

from controlling and we can get a similar order of magnitude of what the costs will be, how do we lump that all together and try to identify policies or programs which could be useful in developing an abatement program?

What I want to illustrate here is that we wanted to marry the economic information to the environmental information, which Dr. Balsillie talked about, particularly the atmospheric modelling, into something we called a screening model. It is an iterative computer model which took the economics and the environmental information and could identify, for example, least-cost strategies to achieve various deposition levels, not only for Ontario but also for all of eastern North America.

The model could identify various strategies for abatement to achieve whatever objective we asked that model to be driven by. Once it had identified a particular distribution of which sources would have to be reduced and by how much, we wanted also to look at what the impact might be on those industries or plants, given the costs associated with reducing potential impact on the communities or the regions where those sources were, and then develop a strategy.

Being economists, we used economic criteria in our input into this whole area. We said, "If we are going to look at developing abatement strategies for acid rain, let us try to find the most cost-effective way of doing it." We attempted to identify the most cost-effective way of achieving some environmental objective.

It is important to point out that it may seem obvious but if you had taken part in some of the interprovincial and federal government negotiations in the early 1980s, it was not obvious to many people there that different sources affect different receptors in different ways and the cost of reducing from those sources varies tremendously. It is not a simple matter of saying, "Let us just reduce source A and forget about B because of the cost."

They may be able to do the same in terms of protecting the environment, but the cost associated with reducing from source A or source B may be very different. We would like to try to minimize total expenditure as long as we can achieve our environmental objective.

We ran our screening model and again, we ran virtually countless scenarios to try to identify different strategies, or if the province had a particular scenario it wanted run so we could look at the implications for each of the provinces as to what the cost might be of different policy approaches to developing an abatement strategy.

Here is one. It was a popular policy approach several years ago. It was "let us just have each source reduce by 50 per cent." In our model, we have 216 United States sources in it, and all the major Canadian sources from these provinces. The model would chunk out what the implications were of a particular policy approach.

Here, we can see that if each source was to reduce by 50 per cent it was going to cost eastern Canada roughly \$415 million a year for 20 years. The US was talking close to \$7 billion. They were tremendous amounts of money.

If we then say "what is the least-cost way of reducing by 50 per cent" and impose that criteria on the same set of sources, you can see the cost begins to drop substantially. Eastern Canada is down to \$282, a roughly 30 per cent reduction in overall cost and the US is now down to about \$2 billion, an

approximately 70 per cent reduction in overall costs.

All I am trying to show is the policy decisions have costs associated with them. If those are not taken into consideration where abatement policies can be developed, which may not be cost effective, they may achieve the same end but it could result in more resources being spent than need be.

We made several presentations to industry, both in Canada and the US. This is a language which they understand, and that is dollars and cents. They, too are tuned into the fact that different government decisions can affect them differently. The benefits may not be there by having everyone do something.

Mrs. Grier: I do not understand that slide. Can you explain to me the least cost is still receiving the 50 per cent reduction?

Mr. Griffith: That is right. To reduce total emissions by 50 per cent. If that were the objective, let us find the least cost. In other words, let us go to each of the sources, identify what it would cost them to reduce by 50 per cent and pick out all those that add up to a total of 50 per cent reduction, but minimize the total cost at the same time.

Mrs. Grier: But still receiving an overall 50 per cent reduction.

Mr. Griffith: That is correct.

Mrs. Marland: How does that slide relate to the previous one. I am glad Mrs. Grier asked that question, because I too was confused.

Mr. Griffith: The previous slide was "let us take every source and reduce them by 50 per cent." Some sources may only reduce by a little bit, but the cost would be tremendous. But if the decision was made that every source had to cut--

Mrs. Marland: So what you are talking about is 50 per cent of those sources, you are not talking about 50 per cent of the total acid rain problem on these two slides. You are talking about 50 per cent of the source and not 50 per cent of the results.

Mr. Griffith: It would be 50 per cent. We have identified the major sources in eastern North America, and major sources mean everything that emits above 19,000 kilotonnes a year. If we took each one of those sources and had them reduce whatever their emissions were by 50 per cent we are talking very high costs. These are estimates of what it would cost to do that.

Mr. Wiseman: When you look at Ontario and Quebec, Ontario has about 1.8 and Quebec has about 1.15. It is costing Ontario almost US\$300 million a year where Quebec is only US\$38 million. How does that work?

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Mr. Griffith: We have many more large sources of SO₂ in Ontario. We also have utilities, which are very expensive to control.

Mrs. Marland: Your question about the rate of emission which is interesting--

Mr. Wiseman: Yes. I looked at what is going into the atmosphere.

More than half of Ontario's is coming out of Quebec, probably more like 60 per cent, and yet it only costs them US\$38 million where it is costing Ontario US\$297 million.

Mr. Griffith: We also have to keep in mind that there can be a number of smaller sources not specifically included in the model. They are included in the atmospherics of it and the total provincial emission level, but in terms of being a discrete source that we can control--

Mr. Chairman: We are not quite picking you up on the microphone. I wonder if we can let Mr. Griffith just finish with his slide presentation; then we can continue with some questions of him.

Mr. Griffith: Again, I caution at this point not to focus too heavily on these absolute numbers. I know they can be difficult to understand right off the bat. I will be willing to provide you with much more background information on these.

(Inaudible) straight above the economics associated with different policy approaches. I do not have a copy of a slide with me today, but we also did many runs where we said: "Let us focus on the environment now, and if an environmental objective has been established, say, just 20 kilograms per hectare per year, let us ask the model what it would take to achieve that in every sensitive area. Who would have to reduce by how much on both sides of the border?" That is when we found this model particularly useful in looking at those kinds of scenarios.

When we are talking about cost of abatement, we are into not only identifying it, but who pays for it. The Ministry of the Environment does endorse the "polluter pays" principle, as much as it can. Sometimes conditions present themselves where one has to relax that principle, but it is basically the foundation of working when we are talking about who is going to pay to correct environmental damage.

It is also important to point out that abatement expenditures do not just leave the economy; they are not simply a totally unproductive use of capital. They purchase abatement equipment. This province has quite an abatement equipment industry. It creates jobs through the installation of abatement technologies. Those have multiplier effects, so it is not just a big black hole where this abatement money to protect the environment is kind of just siphoned out. Some of it does stay in and is reused and redistributed within the province.

From the companies' perspective, it is money diverted from what they might otherwise like to invest in. They may well like to invest in other places. But in terms of the total economy, we cannot view it as simply lost money. There are sometimes the financial considerations of abatement. We cannot ignore them. We have an environmental objective. We want that achieved; the people in the province want it achieved. The cost may be very high, and there may be circumstances where companies really cannot afford at this time to spend the money, so we have to look at the financial considerations.

When we look at the market outlook for many of the companies involved in this province in reducing the acid rain issue, their forecasts are not that good. We are not talking about rapid recovery and making lots of money in the foreseeable future. We have this condition, they are part of the problem, we want them to do something, but the economics may not be there. We cannot, again, ignore that. During the Countdown Acid Rain process--again, I do not

want to steal part of Mr. Scott's presentation--this was a critical issue. It resulted in this smelter modernization fund being established, where the federal government allocated \$150 million to be used for capital expenditures and Ontario committed up to \$80 million. In other words, if companies can show a real financial need to do whatever has to be done to reduce SO₂, then they can apply for this money.

We have also looked at economic mechanisms. I wish I could say that this word beginning with an "m" and ending with an "s" was some esoteric economic term requiring explanation, but it is a spelling mistake on my part for which I apologize. But we do look at a number of economic mechanisms which can be applied to help induce companies to comply with our requirements, particularly in the acid rain area.

Ontario chaired many interprovincial committees which specifically looked at economic incentives which might be applied either at the provincial or federal level, things like delay penalties, surety bonds and effluent charges. Just recently in Ontario, there was an amendment to the Environmental Protection Act that essentially introduced the surety bond for financial security as a mechanism which the ministry now can employ to help us ensure what we want gets done.

It is in the language that companies understand best--dollars and cents. In conclusion, that is the thrust of the economic work in Ontario on acid rain. I would be willing to entertain questions or provide material.

Mr. Chairman: Thank you very much, Mr. Griffith. I am not sure when I initially introduced you whether I did it with an extra degree of respect or not when I referred to you as doctor.

Mr. Griffith: I do not object to that.

Mr. Chairman: I would not if I were you, either. It was a very interesting and informative presentation.

Mrs. Grier: Thank you. Are the slides you had about the costs of compliance to the various polluters based on technology in 1980? Are they really a recalculation of 1980 abatement methods in current dollars or does this reflect changes in technology since then? You said it was in current dollars.

Mr. Griffiths: We were trying to be as pragmatic as possible in this approach, so we had to look at what technologies were available at that time, realizing that innovation does go on and is a dynamic process and that perhaps less expensive technologies may evolve over the years.

We had no way of knowing what might happen and we wanted to know what the economic implications of the day were. If these companies had to do something now, what was achievable within the time frame we were looking at? What menu of abatement technologies were available to our sources?

Mrs. Grier: Have you done any adjustments to that, given the reports from the companies after a year's experience with Countdown Acid Raid?

Mr. Griffith: To date, the companies' reports have been very comprehensive. It is still too early in the planning process for them to identify exactly what they are going to do and the costs associated with that. They have identified research and development costs, but in terms of the

specific abatement technology or process changes that might be implemented, it is still too early yet.

They are looking for the cheapest way of doing this, as well. Certainly, we review their costs and the ministry is reviewing new technologies all the time and the costs associated with them.

Mrs. Grier: How much weight was given to this economic analysis in arriving at the targets that were eventually selected for the Countdown Acid Rain program?

Mr. Griffith: That is difficult for me to answer. We presented information on the targeting and the implications of the sources. It is difficult for me to assess how much weight, because it is a model and it simply points in a direction of who might have to do what. I was not there when the final decision was made.

Mrs. Grier: Are there any data about human costs? All of your modelling has been done on the water, the forests or the buildings. It is now becoming apparent that there are studies that relate the costs of acid emissions to human health, but I take it from your presentation that you do not have any data on that which can be entered into these models.

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Mr. Griffith: There are data available. I think some areas of the federal government have been working on this.

Mrs. Grier: Yes, Dr. Balsillie mentioned that.

Mr. Griffith: The model certainly is amenable, once we have better estimates of the damages and the costs, to any resource, whether it is human or the natural environment. That could be inputted into the models we have if you wanted to look at benefit-cost-type arguments in analysing strategies or identifying--

Mrs. Grier: But you have not done any of that yet.

Mr. Griffith: No.

Mrs. Grier: Finally, you mentioned the smelter modernization plan. I am wondering how much of that money, the \$150 million, has been expended so far. Do you have any information on that?

Mr. Griffith: To the best of my understanding, I believe there has been one application to that from an Ontario source. You must remember that is for all the provinces in eastern Canada. I believe the agreement was that Ontario could receive up to \$80 million of that money.

Mrs. Grier: As yet, we have not spent any of it.

Mr. Griffith: No, because the companies are not in a position to have identified either how they are going to proceed and what the cost will be or whether they will need any assistance. Until all those ingredients come together, they will not know whether they need money, and we will not be in a position to assess whether they should have money.

Mrs. Marland: When you look at the down-range costs of abatement

measures and the alternative--and the alternative is that you do not have the abatement measures in place that we need to have--do you make a comparison with the cost in the other sectors?

One of the arguments we hear all the time is not only the monetary cost of the abatement measure but also, perhaps as a related cost, the employment opportunities within those facilities. Either the money is spent on the abatement measure or we become so strict that we say, "Okay, that is it," and they close down, and those jobs are lost.

The other side of that is the jobs that are lost in the forest-related industries and the agricultural area. I was amazed to see the tourist figure there of \$450 million. From your perspective of dealing with the economics, how do you make the comparisons, or have you studied the other job sectors which are affected by not procuring the abatement that we need?

Mr. Griffith: We try to estimate, with any of the resource sectors that have been identified as being negatively influenced throughout precipitation, what the lost employment opportunities would be as well. We try to identify those jobs.

Mrs. Marland: Do you have those comparisons somewhere?

Mr. Griffith: We have some studies that were done several years ago which attempted to estimate what the employment effects would be on the aquatic sector in our sensitive areas by these different scenarios that we put together. They can be made available.

Mrs. Marland: Just in the aquatic, which is related to tourism?

Mr. Griffith: Yes.

Mrs. Marland: Do you have them in the agriculture and forest industries as well?

Mr. Griffith: Only to the extent that we can identify how many people are employed in those areas. As I tried to indicate at the beginning, we do not have really good damage functions yet on those other sectors. In other words, we do not know how much loss to the forestry industry acid rain is causing, and then translate that into lost revenues or lost employment opportunities.

Mrs. Marland: I have one final question. The amenity value survey you did was very revealing, especially to find that 75 per cent of our Ontario people were willing to pay higher taxes and higher prices. How many people were involved in that survey?

Mr. Griffith: I believe 1,000 people were surveyed.

Mrs. Marland: And that was in the early 1980s?

Mr. Griffith: Yes, about 1982. That study can also be made available.

Mrs. Marland: Was that considered quite a comprehensive study?

Mr. Griffith: It was, and the results were considered statistically representative.

Mrs. Marland: Okay. Will we be getting copies of your slides?

Mr. Griffith: Yes.

Mrs. Marland: For today, it would be very worth while.

Mr. Chairman: It is probably the usual four per cent error factor, 19 times out of 20, or however they say it.

Mr. Wiseman: We have heard a lot this morning about the US and Canada and what we are doing. That is where our problem seems to be. I have visited Taiwan and some of those places where people just do not seem to give a darn the way the smoke-stacks are and one thing and another, but I imagine some of them are advanced in Europe.

Have you gone into some of the studies there and looked at what they are doing and what methods they are using and have used over the years to improve? You were asked earlier about the figures you have there of using the equipment or whatever we have today. Is that taking into consideration some of the equipment European people are using to get around acid emissions and so on?

Mr. Griffith: That information has not been explicitly put into the model. Again, our ministry is very much on top of technological developments.

Mr. Wiseman: Do you and the ministry go to places such as Europe for that and look at what has been done, to see whether we can compare notes and whether there is something we can do that they have already done? There are a lot of industrialized communities there that must have the same problems, lovely forests, tourism and so on, as we have in Canada and the US.

Mr. Griffith: Very quickly, regrettably, no. I have not been to Europe, but a lot of information is exchanged. Many of my colleagues go.

Mr. Wiseman: Are they getting into it as we are?

Mr. Griffith: They seem to be following the path we established several years ago.

Mr. Wiseman: So they are following us.

Mr. Griffith: Mr. Scott or Dr. Balsillie would be a better person to answer that, but on the economic side, they are most impressed with the work we have been doing here and seem to be modelling their efforts after our program.

Mr. Wiseman: I was quite interested in your presentation today when I looked at what it is going to cost Inco in American dollars--probably \$1 billion--to do what it has to do to come down to the 60 per cent. You stated that if a factory or a company cannot realistically meet those goals--and there would have to be about \$200 million a year net profit off Inco to pay for those--it can apply for this fund, which is just a drop in the bucket. I took it from that you might extend those controls a little longer than 1994, if it meant the loss of industry or a great loss of jobs. To me, that seemed a realistic approach.

Mr. Griffith: I would like to caution again that the cost for the sources was done several years ago and was amortized over a 20-year period to get present-value numbers. Right now, those numbers for Inco are very much

lower. If they had to spend money today, we are still talking a couple of hundred million dollars, but I am sure you will hear much more about that when you talk with the industry.

Mr. Wiseman: Even to a company of that size, that must be a lot. That is net profit they would have to put out and still show a little profit for their shareholders, or they certainly would not stay around. I imagine it would be awfully difficult for them.

Mr. Griffith: For companies like Inco, what they do to reduce SO₂ can be part of a modernization process which improves their efficiency, so they do get some economic gain from that; not in all cases, but in some.

Mr. Wiseman: We are caught in a dilemma; we want jobs and we want clean air. How do we arrive at both and still keep the plant viable?

Mr. Chairman: Our researcher, Mr. Neufeld, has a couple of quick questions.

Mr. Neufeld: If I might ask a few questions on behalf of the committee, I understand that, of that \$150-million federal commitment, approximately \$85 million has been earmarked for Ontario. The province has also been committed to match that amount. Is that a formal federal-provincial agreement? Has that been written down anywhere or is it just a verbal commitment we have?

Mr. Griffith: Personally, I have never seen a document. I believe the ministers of the governments did sign an agreement. Perhaps Wayne could add something to that.

Mr. Scott: Currently, the ministers at their meeting on the east coast agreed to the reductions and the federal Minister of the Environment and our Minister of the Environment have confirmed that they will stand behind those commitments. As yet, there is no agreement on paper signed by both governments that specifies it.

One of the things that is appropriate is that both governments are anticipating that after December 31, 1988, we will have to be able to access those funds because it is not until that time that the major companies in Ontario anticipate moving into the phase of actually initiating their capital expenditures associated with the smelter modernization.

In Quebec, they are a little bit further along in their negotiations, but they are a little further behind in their progress. They are currently at the stage where the federal and provincial governments and the company are at the negotiating table trying to get a formal agreement that talks dollars and movements and how those dollars will flow from the government agencies to the company.

Mr. Neufeld: Just one more strictly financial question and the other ones I can leave for maybe this afternoon. Specifically, Ontario Hydro has estimated ball-park figures of expenditures possibly between \$4 and \$5 billion to achieve its pollution abatement targets by the year 2000. Does the ministry consider this to be a fair ball-park estimate, or have you also made some rough estimates of what Hydro might be spending?

Mr. Griffith: I would have to go back and see what was being proposed over what time period. Those figures do not sound totally foreign to

me. Yes, we have done some estimates, but again, our engineers work with the engineers at Hydro and come up with these cost estimates, and that is all they are at this point. I do not mean to be evasive, but I do not want to say anything until I see some background information on the cost figures you have mentioned. In fairness, I am sure that it is probably as accurate an estimate as they could come up with given a lot of the uncertainties as to how they might proceed.

Mr. Chairman: Thank you very much, Mr. Griffith. As there are no further questions, we will adjourn the committee until this afternoon. Mr. Scott, you will be up first thing.

The committee recessed at 12:13 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

TUESDAY, FEBRUARY 24, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

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South, L. (Frontenac-Addington L)

Also taking part:

Morin-Strom, K. (Sault Ste. Marie NDP)

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office

From the Ministry of Natural Resources:

Burgar, R. J., Assistant Deputy Minister, Southern Ontario

Glooschenko, V., Wetland Habitat Co-ordinator, Wildlife Branch

Dodge, Dr. D. P., Supervisor, Environmental Dynamics Section

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Tuesday, February 24, 1987

The committee met at 2:05 p.m. in committee room 151.

ACID RAIN
(continued)

Mr. Chairman: The committee will come to order. We have Mr. Scott appearing before us this afternoon to speak specifically about the Countdown Acid Rain program. I will turn it over to you, Mr. Scott.

Mr. Scott: As is usually the case, I will begin the presentation by asking you to make a small correction of the typing on the information package I handed out to you this morning. It was handed out this morning, but I think you just received it now. The last bullet point on the first page where the date is February 5, the year should be 1985 as opposed to 1987.

Essentially what I am going to do is run very quickly through the information that was included in our Countdown Acid Rain package. I will be looking at mainly the information contained in the thicker grey document and we will be highlighting several points I feel are of interest, and it would appear the points based upon the questions of several members of the committee this morning which they have already decided are of interest to them.

We will quickly run through this. I would welcome questions as I proceed or if you wish to wait to the end. Whichever way you wish to proceed is satisfactory to me.

Without getting too much into the history of what went on, essentially the setting of the scene was that Canada and the United States in the early 1980s were well on the way towards negotiating some kind of control program. Unfortunately, that process fell apart and it was decided by Canada that it should lead the way and proceed unilaterally.

In March 1984, as was mentioned this morning, the federal-provincial environment ministers announced a 50 per cent reduction from eastern Canada's 1980 base case. Two dates are significant there; first the 1980 base case.

The year 1980 is used throughout most of the literature in negotiations between Canada and the US because it was finally agreed that in order to keep things simple, we would refer to a common or standard year and 1980 was the first year for which data was available from most jurisdictions collected in a uniform manner in a quality-assured, quality-controlled manner and as such has been used as the reference point for most negotiations since that time.

In 1984, the decision was made to effect a 50 per cent reduction, but at that time there was no commitment towards how that reduction would actually take place. I would also point out that in 1984, the year 1994 was 10 years farther down the road and in the 1984 deadline, the commitment was for that reduction to take place within 10 years. It was not to take place by the year 1990, as was suggested this morning.

The commitment to the 50 per cent reduction was made with the full realization that if the US followed suit--i.e., they came away with a 50 per

cent reduction--then the deposition within our sensitive areas could be reduced to in the order of 20 kilograms per hectare-year and this would allow all but the most sensitive aquatic ecosystems to recover or at least would minimize the impact upon those systems.

Following that, on February 1985 in Montreal, the environment ministers sat down and actually negotiated some final numbers as to what the shares would be. While it may be interesting to go back into the records of those meetings and figure out why certain provinces were assigned certain numbers and why some provinces did more than others, the bottom line of it shows up on page 2. The allocations as they were made at that time and as they are set out in the countdown package were essentially that there would be significant reductions with the 1980-based case year. We have shown in the table the numbers for the reductions each of the jurisdictions undertook to obtain.

You will note that Ontario is quite conspicuous by the enormity of the reduction that was to be undertaken by the province and you will also note that the reduction that was to be undertaken at that time actually was going to exceed the amounts of the projected emission in the year 1994. Another thing to note, as shows up in the countdown text, is that even after this meeting, there remained some 319 kilotonnes of SO₂ to be apportioned at some time in the future.

Within Ontario, the process of selecting how one would go about obtaining the 50 per cent reduction was a fairly long and involved one. It involved consideration, as Mr. Griffith pointed out, of the socioeconomics of the realities of the marketplace, of the nature and magnitude of the situation, of emissions within the province.

The most important details are probably summarized on page 3 in that 80 per cent of Ontario's come from four corporate sources: Inco, Ontario Hydro, Falconbridge and Algoma Ore's operation in Wawa.

Quite clearly, targeting a program at these major sources can effect a very appreciable reduction of SO₂ in a province by having only a very limited number of players taking part. The countdown program therefore was targeted at these four major players with the other smaller sources in the province being squeezed down by a number of things, officially by the boiler regulation which came out as part of the countdown package and as well, as was alluded to this morning, by the ongoing tightening up of controls for SO₂ emissions that takes place in the normal day-to-day considerations of industrial operations in the province. By that I mean through control orders, through consideration of local conditions, through tightening up our remissions because of their impact upon the local neighbourhood they are in.

The countdown program itself was actually implemented through the five regulations that you have in your package. They were filed with the registrar of regulations on December 17, 1985, with the boiler regulation on January 16, 1986.

To put it in a nutshell and characterize the regulations that were set in place for the companies, essentially, the four--Ontario Hydro and the three smelting companies--were assigned reduced limits for the year 1986. In other words, there was to be an immediate reduction. Secondly, in the year 1990 there was to be a reduction of the SO₂ emission limit for Ontario Hydro and in the year 1994, there were final emission limits for all of the four major players.

An important point to note in the regulations is that no technologies were designated or dictated by the regulations. The companies were free to select the methodology that was most appropriate for them to bring them into compliance with the requirements of the regulation.

As an administrative requirement of the regulations, each of the metal companies is to submit progress reports each six months, and to facilitate the public review of how things are progressing within the countdown program, Ontario Hydro has voluntarily agreed to submit a progress report on the same kind of schedule.

The regulations require final reports by December 31, 1988, which will specify the company's final decisions about how it will proceed to achieve the reductions required by the regulations. The regulations provide for full implementation of the numbers by 1994. At this time, a simple review of the regulations will confirm that there are no provisions within the regulations that allow for extensions of those dates.

I might just spend a few moments trying to capture in a few words the concepts embodied in the boiler regulation. Essentially, this regulation applies to new or modified boilers which will be using coal or fuel oil--there is a word missing on page 6--or new or modified boilers which will be using natural gas where coal or fuel oil is used as the source of energy whenever the natural gas supply is interrupted.

The boiler regulation clearly sets out that it does not apply to the Ontario Hydro generating boilers. This is done, of course, because Ontario Hydro has its own regulations setting a cap on its total emissions for its system. It also does not apply to boilers used for comfort heating in dwellings with fewer than three families, and it does not apply to boilers using natural gas or number 2 fuel oil when they are burning at a rate of less than 1.58 million kilojoules per hour.

Last, the boiler regulation prohibits the use of coal or fuel oil with a sulphur content greater than one per cent in the boilers which are subject to the regulation. One of the things the regulation does not do is that it does not require any alteration of existing fuelling arrangements within the existing boilers. Those are covered by other regulations that limit the sulphur quantity of the fuel to be consumed.

On the next page, for the information of the committee, I have set down on paper merely the limits for emissions as they appeared in 1986 against each of the major corporate sources, Inco, Ontario Hydro, Falconbridge and Algoma Ore. That is in the first column. Then the new countdown limits are set down there to facilitate your comparison of the new versus the old. As well, I have shown under the dotted line the total SO₂ emissions that in 1985 were predicted would come from all other sources. This would include all boilers and all fuelling that would take place in the province from both stationary and mobile sources.

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I have shown on the last line the 1994 emission limits which exist in the four regulations, coupled with the projected SO₂ emissions from all other sources to give Ontario a total of 885 kilotonnes per year as our limit in 1994. If we compare that against the numbers set out in the earlier table, we will note that Ontario's commitment was to reduce our emissions to fewer than 130 kilotonnes per year. That demonstrates how much farther we have squeezed down that target in the countdown program.

I had pulled out some numbers to provide some important pieces, as far as Ontario Hydro goes, pointing out that although all the earlier tables looked specifically at SO₂, the Ontario Hydro regulation also includes a requirement to reduce the NOx emissions from all its Ontario sources. In that table I have set out the limit for not only the SO₂ numbers, which conform to the numbers supplied earlier in the table, but also for the NOx numbers. As you can see, there will in fact be a significant reduction in NOx built into the regulation. We anticipate that with time NOx will become a greater concern to Canadians and Americans in setting their respective abatement numbers.

I would also like to point out that with regard to the banking provisions of the regulation, the way the regulation reads now is that when emissions are below the legislated limits, any surpluses that accrue may be banked and Ontario Hydro may apply to the government for permission to withdraw credits from that bank. Ontario Hydro may also apply to the government to overdraw the account, in the banking analogy, under extraordinary circumstances to borrow against the future, perhaps. Last, under both of the situations above, the government will make the decision about whether Ontario Hydro's request should be approved or whether Ontario Hydro should be directed to solve its problem in some other manner.

The numbers I have provided on the last page are merely a statement of where we stand today. We cannot and do not attempt to indicate that the differences between the actual emissions in 1986 and the legislated emission limits for 1986 are completely the result of the Ontario Countdown Acid Rain program. None the less, it is important that the people in Ontario and certainly the major industrial sources in the province do get credit for being able to bring in their control programs and operating their facilities in such a way as to stay well under those limits. Suffice it to say that in the year 1986 the actual emissions from those four major corporate sources in SO₂ represented only 79 per cent of what the legal limits permitted. I stop at that point.

Mr. Chairman: Thank you, Mr. Scott. I am sure there are questions from the committee. I have one. Do the results the companies have attained at this time, as they proceed towards 1994, beg the question as to whether we set our goals too low?

Mr. Scott: I do not think so, for a number of reasons. It is always very difficult when you are attempting to set maximum limits in legislation to anticipate the upswings and downswings of the economy. I am certain Ontario Hydro has operated its facilities in a fashion that permitted it to keep its emission limits as low as they are, and it is very pleased it has been able to do that. However, everything that could go wrong did not go wrong last year, and we are optimistic that we will always be in a positive situation, i.e., that the emissions will be below the legal limit. However, we have to be careful in setting the legal limits so that we will allow for upturns in the economy, increases in productivity and all those things.

Mr. Wildman: The first reduction would be a bread-and-butter type of thing, would it not? Then, as you get into it further, you would get into the more costly areas to clean up, so that you could have what looked like a big reduction in one year at first, but as you get into it, it may take longer and be more costly. Is that true?

Mr. Scott: That is certainly a valid point. The easiest and simplest things are done first, and their impact shows right away. The tougher, more expensive things take a little longer.

The point I was trying to make as well is that in the year 1986 we have not seen major new capital works in place in these industries that allowed them to reduce their numbers. The reduction is something that has come out of their day-to-day operations as opposed to brand new treatment facilities that are markedly different than in 1985.

Mr. Wiseman: Can I get back to page 6 on boilers and ask you, whoever the four big polluters are in Ontario, if these boiler regulations go in, does that mean that Ontario Hydro would have to purchase the harder coal to come up to these boiler specifications rather than the coal it is burning at the present time?

Mr. Scott: Boiler regulation 16/86 specifically exempts or does not apply to Ontario Hydro because it is covered by the other regulations that set specific emission numbers for SO₂ and NO_x for all of Ontario Hydro's operations.

Mr. Wiseman: Does it apply to the other three? We talked about four that are polluting the most in Ontario.

Mr. Scott: The other three big industries are not using boilers. Their emissions come from a smelting operation as opposed to a boiler fuel operation.

Mrs. Grier: You made the point that the regulations did not dictate any technologies to the companies. I have always wondered what use was made in the development of these regulations of the task force that had taken place in 1982, which looked very specifically at Inco and Falconbridge and at technologies that could be cost-effective. What use was made of that task force in the compilation of these regulations and in the compliance since December 1985? Has there been any repeat of the same kind of work that was done for that 1982 task force?

Mr. Scott: To answer the first part of your question, the task force report and the research that went into that formed the basis for the beginning of considerations of the Countdown Acid Rain program. All that information was actually used to start the countdown deliberations from that point.

Subsequent to the implementation of the countdown program, we have not proceeded with formal continuation of those earlier studies, but we have been looking at them informally on an ongoing basis. As well, until we start to see some hard numbers coming out of the company--and we will see those by December 31, 1988--we are not really in a position to be able to know what the numbers are going to come up as.

As you will remember, I think there is a significant difference between the projected nickel prices in that early work as opposed to what is the case now. The early work, while it was very good and very relevant at the time, has to be updated with new market conditions to be completely applicable. As well, there have been some new improvements in technology. The information that was contained in that process and that came out of that process is built into our process now. We are using it.

Mrs. Grier: The kinds of emission reductions in that report, such as increased roasting and direct conversion to acid in roast production smelting, that it was contemplated could be obtained in 1982 were taken into account when you set the limits in 1985?

Mr. Scott: As well as technology improvement since the time the task force had started to deliberate.

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Mrs. Grier: One of the tables--I think it is on page 7 of what you submitted to us--

Mr. Scott: The numbers at the bottom are for the following page.

Mrs. Grier: It is the table of SO₂ emissions where you show us what the 1986 projection was and the new countdown limits.

Mr. Scott: Those were the 1986 legislated numbers.

Mrs. Grier: Right. For the base year of 1980, do you have any figure of what the actual emissions were from other sources? What I am wondering is whether the reduction that is projected here in the 235 down to 220 relates back to the base year of 1980. In all of the others, you have shown us in your table earlier how much has been achieved since 1980, but not in that one.

Mr. Scott: I do not have all those numbers with me here today.

Mrs. Grier: Is it fair to say that the amount of reduction in emissions from other than the big four is comparable in proportion to that expected of the big four? In other words, do you think the emissions from--

Mr. Scott: We are looking for a reduction of 15 kilotonnes for all other sources.

Mrs. Grier: Which is considerably less in proportion to the amount of reduction you are expecting from some of the others?

Mr. Scott: That is correct, and this is where we are going back to the cost-effective component that Carl mentioned earlier where all other sources include the myriad of small sources, all the petrochemical industry, small boilers, large boilers and all those other sources. We are anticipating that the reduction we are projecting that will take place in all other sources will take place as a result of what is happening in the marketplace as opposed to any direct legislated intervention in order to get a further reduction. This represents fuel switching, modernization and the closing down of relatively small emitters.

Mrs. Grier: Given that there is no requirement for those smaller sources to report regularly, as there is for the four big ones, what mechanism do you have to increase the rate of reduction from those other sources if technology improves and it becomes demonstrated that the 220 could be significantly lower by 1994?

Mr. Scott: We know the 220 can be significantly reduced by 1994 with a large expenditure of money, but to answer your specific question--

Mrs. Grier: How are you monitoring that?

Mr. Scott: Within our countdown program, we have put the spotlight on the four major companies. We use our existing data collection system that goes around and picks up the emissions numbers from all the small ones to

collect the information on the big picture. That is how we are collecting that information. It is coming through by our normal mechanisms that say at the end of the year we then approach the companies and give them a form to fill in with the total emissions of all the different contaminants they emit and the product used. That all comes in centrally. We put it into an emissions database for the whole province, and then add that all up, the cumulative.

Mrs. Grier: What would you have to do to reduce that 220 if it became apparent midway through the program and the technology was there for all those other sources to reduce significantly? Would you have to rewrite the regulations?

Mr. Scott: We would have to introduce regulations for those segments of the industry that we had decided we were going to target with the next level of reduction.

Mrs. Grier: Does your monitoring provide you with the information on which to make that determination?

Mr. Scott: Yes. It provides us with the details on the emissions, and also, through the references this morning, we are continuously collecting information about control technologies that we could look at applying to specific segments of industry where we can evaluate the cost-effectiveness of going to another sector of industry to try to get further reductions.

Again, the big Ffur represent 80 per cent, and so all other sources represent 20 per cent. In most of those areas, there are a number of options open to us. We could legislate down, require lower sulphur levels in coal. We could require control equipment. We could require changes in operation. We could designate certain segments of industry, as has been the case with our utilities and the base metal smelting. We could go into petrochemical, pulp and paper or whatever and dictate reductions in those areas as well.

Mrs. Grier: So there is a lot more you could do if you decided this was warranted.

Mr. Scott: That is true.

Mrs. Grier: Turning to Ontario Hydro, what was the rationale for the banking provisions in the Hydro regulation? Why did you allow Hydro to have this banking provision?

Mr. Scott: On that one, I am going to have to say that, unfortunately, I was not involved at the time all the negotiations went on. I can offer my personal opinion, but I cannot really shed any light on all of the processes that went into the decision-making.

For the most part, I think it was as set out in the text, essentially recognizing what goes on in industry and with Ontario Hdyro. It was a requirement for some flexibility in setting the numbers while we went into the transition up to 1994. It was to say that if you operate really well and come in under the limit, you will get some credit, not necessarily that you will get it back all the time, but you might be able to benefit by eliminating emissions this year, and if you need them in future, you might be able to benefit by your reduced emissions.

Mrs. Grier: What kind of procedures are in place should Hydro apply for permission to withdraw credits from the bank or to exceed the current limit?

Mr. Scott: Currently, there are no procedures in place. I think that is one of the areas I have heard the minister in other forums say he is looking at. I believe from his remarks he is looking for guidance and suggestions about what the procedures should be should the government receive a request for a withdrawal or a loan based on the future. At this time, we do not have anything in place that says this is exactly what will happen. It will be treated as a very unusual and exceptional circumstance and be considered on its merit.

Mrs. Grier: Is it not likely that when that request comes there is going to be a small time frame and Hydro is going to want to do it yesterday when it asks for permission to exceed? If you do not have a set of steps or procedures in place, how are you in a position to respond?

Mr. Scott: I hope we will be able to pattern the response based upon the priority of the situation. I am not entirely certain that a request to withdraw will be an 11th hour ultimatum. I think it is one of those things where they are reporting quarterly, they know their status with regard to what their emissions are vis-à-vis what they are allowed to emit, and if they are encountering a problem, then they will know their limit is set for the whole year.

They will know early in the year, based upon the current trends or problems or a reactor problem or something like that, that they are going to be going over and they would then probably make an application based on those projections. There would be a fair amount of lead time, I think.

Mrs. Grier: It is precisely in the case of a reactor problem that I worry there will not be the lead time. Do you see that not being a concern?

Mr. Scott: I see it more if a reactor is going to be down for a short time, that it would be something where they have flexibility in their system already. If it going to be down for a much longer time, then they have to look at a longer-term solution. Whether that is coal or purchases from Quebec, Manitoba or the United States would be factors that would be considered.

Mrs. Grier: Do you see any limits being placed on the amount of peaking that would be permitted to Ontario Hydro if it wanted to bank or take from the bank? What studies have you done on the effects of short-term peak emissions by Ontario Hydro?

Mr. Scott: Do you mean actual sulphur dioxide emissions that come out of their operation?

Mrs. Grier: Yes, for a short period of time, but it may not exceed their overall limits.

Mr. Scott: I think the numbers are set based more upon a longer period of operation of the units. They run up to their capacity and emit at their maximum rate and they do not really go much beyond that.

Mrs. Grier: Maybe I am misunderstanding the program then. As I see it, they can go up and down as long as there is an average.

Mr. Scott: As long as the total amount under the curve stays less than the total that is set in the regulation.

Mrs. Grier: So there is a limit on the total amount at any one time.

Mr. Scott: Total amount annually.

Mrs. Grier: In a year.

Mr. Scott: Based on the year.

Mrs. Grier: What I am getting at is, say, if for a period of a week or 10 days within that year they greatly exceed the amount, do you have anything that shows what the effect of that might be?

Mr. Scott: Where we have the dilemma at this point is that there are in place as well operating requirements for Ontario Hydro that say you may not emit above this level because then you start to interfere with your neighbourhood. Those are the controls that handle the peaking situation. From an acid rain perspective, we are more concerned about the total amount of sulphur dioxide that leaves those stacks over the total year.

Mrs. Grier: Over the long term.

Mr. Scott: Right. That is where this legislation is different from most other legislation that is in place in North America. It sets its mind to the long-range transport phenomenon. The restricted numbers on Inco and Falconbridge are not to make Sudbury a better place; they are to cut down the emissions going into the United States, to cut down the emissions that are going elsewhere in Ontario and to cut down the emissions that are reaching Quebec and other areas. In that regard, it is quite different. It has gone the next step in terms of control technologies.

Mrs. Grier: Looking at the Algoma situation, the fact is that they have not exceeded theirs because they have reduced production. After the first six months, you asked them for a contingency plan. At the end of their second six months, that issue has still not been addressed. I am wondering what sanctions you and the ministry have if any one of the four do not comply or refuse to implement suggestions that you might make in response to their six-month reports?

Mr. Scott: I will answer the question that you have not asked first, and that is that the numbers that are set out in the regulation are in place so that the companies cannot emit more than their legal limit. In the case of Algoma Steel, they have in place a legal limit. They cannot emit more than that. If they should decide they are going to increase their production on some day, they may reach a number, and if they produce the next day, they will exceed the limit. Then it is quite clear and under the law they will have transgressed and, as such, normal procedures under the law will take place.

With regard to the process by which the companies make their report and by which the government provides for the public a statement as to what their response is to the report, there are no mechanisms built in to the process at this time. However, there are other mechanisms under our existing legislation

that would allow staff or the minister to provide certain directions to the company that it must supply certain documents, decisions or whatever.

We could follow up if we got to a situation where we felt the people of Ontario and the government of Ontario needed to know what was going on and the company was in a position where, for whatever reasons, it was not prepared to provide it. There are some mechanisms in place but they are not captured in the countdown legislation.

Mr. Chairman: Just to follow up on that, was any thought given to making the emissions a function of volume or production so as to ensure that technology is being developed in those instances where perhaps because of volume or production the emission levels are being reached?

Mr. Scott: In order to answer your question, I am going to have to say I am not sure whether it was a factor that was considered in coming to the final decision. I believe it was, but I cannot state categorically that was one of the options that was considered.

Mr. Chairman: But it is not part of--

Mr. Scott: It is not currently part of the legislation.

Mr. Partington: I note that in March 1984 the federal and provincial governments agreed on a reduction of 50 per cent, and it appeared to be confirmed in February 1985 that there would be a reduction of 50 per cent in emissions. On what basis was it determined very shortly after that, in December, that 60 per cent was the appropriate level of reduction and not 50 per cent?

Mr. Scott: Within Ontario?

Mr. Partington: Yes. What was the reason for that change, other than perhaps to try to do better?

Mr. Scott: Essentially, it was to try to do better. At the point at which the regulations came into play, there had been extensive discussions with industry, with the representatives of Inco, Falconbridge, Algoma, Wawa and Ontario Hydro, and a very serious consideration of information such as the task force report on smelter modernization and other documents that were coming from those companies.

I think what was in the back of the minds of the people doing the negotiations was: "Let us set realistic, reachable numbers as tight as we can make them. Let us not simply stop and say that if we get to 50 per cent, we have it made."

Mr. Partington: Was there scientific or technological expertise available at the time to confirm to you that 60 per cent would be achievable?

Mr. Scott: The 60 per cent is actually the back calculation. The way it was done was that the limits the companies could reach within the 1994 time frame were identified. After we had established those limits with negotiation, we added them all up and calculated and it turned out to be 60 per cent.

Mr. Partington: But that must have been done to arrive at the 50 per cent originally.

Mr. Scott: The 50 per cent target that was set originally was set by the Canadian ministers, based upon information they had that showed if we could reduce 50 per cent of the emissions in Canada and the eastern United States, we could reduce the deposition in Canada in the sensitive areas to 20 kilograms per hectare or less. That is where their 50 per cent came from.

The Canadian ministers decided they would go on their own, hoping the Americans will follow, even though they knew that alone, 50 per cent reduction in Canada will not give us 20 kilograms per hectare.

Mr. Partington: That was adopted by the province in 1984-85, right?

Mr. Scott: That is correct.

Mr. Partington: It has been up to 60 per cent?

Mr. Scott: The actual detailed calculations with the companies have resulted in a 60 per cent increase and an actual reduction on the part of those companies of about 67 per cent.

Mr. Partington: Is there technology available to reach those 60 per cent limits by 1994? Does the technology exist now to do that or is this something that has to be discovered or invented or created in the future?

Mr. Scott: I will provide you with a very short answer and I expect the representatives of those companies, as they appear before you tomorrow and the next days, will provide you with more information.

Government and industry experts and the representatives of those companies feel that technology can be put in place and operational within the time frame. In other words, it is not fully developed to the point where you go to the corner store and buy six of them for installation, but it is past the point of an idea on a piece of paper with a sketch. The companies are currently involved in a very progressive program of improving upon the design of those technologies so they can get enhanced productivity as well as enhanced environmental controls.

Mr. Partington: Do the banking provisions apply only to Hydro or do they apply to the others?

Mr. Scott: Only to Hydro.

Mr. G. I. Miller: In the tonnages that have been put forth, I do not see anything with regard to transportation systems such as automobiles. Is there a total figure on what they produce?

Mr. Scott: We have a detailed breakout of all the total emission sources in the province. In terms of SO₂, it is not one of the major parties. It is not a significant source when ranked against most of the others.

Mr. G. I. Miller: There are no numbers on that?

Mr. Scott: I do not have them with me today.

Mr. G. I. Miller: Do you have them?

Mr. Scott: Yes, we have numbers in the inventory that will give us a full breakdown.

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Mr. Partington: In the regulations, I see for Inco, Falconbridge and Algoma the limit in 1986 is at 685. Does that continue at 685 right through and including 1993 or does that decrease each year?

Mr. Scott: No. The limits are as set out there. They are in place now and will stay constant.

Mr. Partington: Why a constant level and then a dramatic drop in the last year? Why would there not be a descending drop?

Mr. Scott: I think that goes back to your question about the technology. The knowledge in this area is such that companies have the pieces but are not yet sure that they can hook them all up, how fast they can hook them in and at what point they will be seeing the reduction.

We expect that the actual emissions will decline over time, but there will be some ups and downs as the companies install the unit and then have to take it out of service to improve it and then put it back in service, etc.

Mr. Partington: Would that not suggest that if in the first year, in effect, the saving devices were in place to meet the limits, there has to be a long time in order to achieve the ultimate goal and that is why the limit is the same, so they have that number of years to try to achieve that goal?

Mr. Scott: Certainly, the regulation reflects the fact that it will take time to develop, finance, construct and get into operation those very complex pollution control devices and smelter modernization equipment.

Mr. Wiseman: If it goes right to the end of 1994 and then drops down, because then hopefully we will have all the mechanisms to clean the air and one thing and another, and they think they will have these mechanisms in place, how was 1994 pulled out of the air as being the magic year that all these things can be bought at the corner store, to use your expression, and that they can have them implemented and so on? Where did we get 1994? Was that just a good year to say they have to be in place?

Mr. Scott: I suspect it was 10 years from the first commitment. From 1984 to 1994 was 10 years.

Mr. Wiseman: As lay people sitting here and trying to get a handle on it--and you are more familiar with this than we are--how are you sure that these mechanisms will be in place by 1994 if they are not now? We have learned that Europe is following our example, and you can buy some of these at the present time. The companies are developing them. I wondered if we just pulled this figure of 1994 out of the air, as I think Peter said, how firm are we that they can have that in place?

Mr. Scott: In response to your question--and I am very pleased you asked it in the way you did--what we are keeping in mind here is that it does take time to get these systems in operation. We anticipated that there may very well be concerns, based upon the performance in the past, that we would set a big, long time frame and then find out that we were going to have problems delivering. So into the regulation and the countdown program, we have built some checks.

Those checks are for the most part the reports the companies provide

every six months to bring the government, the public and whoever is interested up to date on how the companies are progressing towards making some final decisions. In the regulations, they are required to make their final decisions, after all these considerations of technology and improvements, by December 31, 1988. They must make final decisions about what technologies they will use, about costs and procedures and everything else.

Once that information is public, decisions can then be made about applying for funds, the smelter modernization funds that were mentioned this morning. Once those decisions are made, funds can be allocated and the companies can proceed to get their approvals, order equipment and start installation.

Between December 31, 1988, which is effectively 1989, and 1994 is quite a short time period. It is going to be a period of very frantic activity on the part of those industries to actually get the equipment designed, approved, built, installed and operational; so it is a very tight time frame.

In sitting down with the companies, it was fairly obvious that we had to ensure there was enough time built into the program to allow the companies to test and to develop the technology, to put it into place, to bring forward the results of their testing for government approval and concurrence, to put that information before the public and then to allow them enough time to actually build and install the rest of the equipment.

The 10-year time frame is very tight but I believe very fair. So far, the companies appear to be using the six-month reporting period as a targeting mechanism. They are now looking at this problem with blinders on, but they are no longer being distracted by a new technology that may be invented here or there. They are now looking at specific technologies that will do the job for them. They are looking at enhancing and improving those technologies and then being ready to report December 31, 1988, to make a final decision.

They feel it is fair. They feel the time frame was necessary. We agree it was necessary and it turns out the 10 years is very convenient, but we do not think it could be done much faster without seriously interfering with the economics of how the companies would proceed.

Mr. Wiseman: Just to clarify this, the companies have to look after the research and development themselves and then make sure it is built and put into place. Is the Ministry of the Environment not helping them with the research and development, not only helping with knowledge but maybe a bit of financing to make sure that they are getting some help, to encourage them, or do they have to pay all these costs themselves?

Mr. Scott: For Ontario Hydro, they pay all the costs. The smelting industries, such as Falconbridge and Inco, are eligible for federal funding to assist them in smelter modernization research. Some federal money is available. This is something in which the province and federal government have clearly established areas.

Mr. Wiseman: I guess I misunderstood that this morning. I thought the matching money was for--

Mr. Scott: There are two pots of money, one pot of money to fund research on new methods and another pot of money, which was discussed this morning, the actual capital dollars for smelter modernization. That is the one where the \$150 million applies.

Mr. Wiseman: So the federal government is assisting there, but as a provincial government, we do not enter into that, or do we, on a cost-sharing basis?

Mr. Scott: In funding in the research area, we are currently not involved in most of the projects under way. There may be little things that fit in under other programs, but the bulk of the research work that is receiving government funding is being funded through existing federal programs. Inco, for example, would be looking at applying for its Copper Cliff operation and also its operation in Manitoba. All the smelters would be looking for funding from that federal pot for research.

Mr. G. I. Miller: Did you say there was \$80 million from the province and \$150 million from the federal level? I thought those were the figures given to us this morning.

Mr. Scott: The \$150 million is the money that has been identified by the federal government as being for all of Canada and \$80 million of that is to be allocated in Ontario, with matching dollars from Ontario, for capital construction costs for those eligible.

Mr. Wiseman: However, the agreement is not signed yet, is it?

Mr. Scott: There is no formal agreement signed.

Mrs. Grier: You do think the federal government reneged, do you, Mr. Wiseman?

Mr. Wiseman: No, but I was worrying about the provincial government. It is not putting anything into research.

Mr. Chairman: Mrs. Grier, and then we will have the Ministry of Natural Resources.

Mrs. Grier: I realize that Mr. Scott is the last witness from the ministry and I just want to ask this: In conjunction with the 10-year time frame that you have discussed with Mr. Wiseman and your planning of what had to occur in that period, did you incorporate into your planning the environmental assessment process?

Mr. Scott: Only for Ontario Hydro.

Mrs. Grier: You did envisage Hydro needing environmental assessment approvals?

Mr. Scott: For its scrubber program, yes.

Mr. Grier: From reading Hydro submissions, I get the sense that it sees the environmental assessment process as somehow something that is going to extend the period, as far as it is concerned, and I just want to be very clear, now that Hydro has been converted to the view that environment assessments are required, that this was in fact something you had envisaged and is not likely to be used as an excuse for lengthening the period within which it has to comply.

Mr. Scott: No one has suggested that the numbers in the regulation or the timing of Ontario Hydro's regulation would change in any way, shape or form.

Mrs. Grier: Thank you.

Mr. Scott: There was one point I mentioned earlier which I did not cover adequately with respect to the 319,000 kilotonnes that were left to be allocated after the ministers met and actually assigned the numbers.

The point I wanted to make was that in Ontario's role in the negotiations with the federal government and also the Canadian negotiations with the Americans, it has always been very clear to us that the unassigned 319,000 kilotonnes is an area on which our American observers would pick up and say: "Clearly there is no point for us to get worried because the Canadians still have to figure out how they are going to assign the rest of it. The easy apportionings have been done. Now we will wait and see, and they will probably never get around to doing anything about the 319,000."

That was part of the motivation as well, to tighten up the 50 per cent in Ontario and to go as far as we could go without crippling industry, to take them as far as they could go to make sure that we were being fair, tough but fair. We had gone past that number and we were very interested in signing an agreement with the federal government. However, as part of our negotiations with the federal government, we would like to see, beyond what Ontario will have, that the residual part of that 319,000 can, in fact, be very quickly assigned within the rest of the provinces. That is a task that has yet to be completed and one that we consider to be a priority. The unassigned numbers still trouble us very much, small though they be.

Mrs. Grier: Do you know how much of it is assigned to which province; how much of the 319,000 is legitimately ours? We do not know?

Mr. Scott: Not yet. We have already assumed the lion's share. Again, we are hoping this will provide incentives for the other provinces to pick up pieces.

Mrs. Marland: Mr. Scott, you were here this morning when we were talking about some of the general concerns with this whole subject area. In particular, this morning in our questions we touched on economics and health. One of the things we should have asked then and which you may be able to answer is whether there are interministerial committees involving the Ministry of Health. We are going to hear from another ministry in a few minutes.

While we are all very concerned with our natural science friends, the trees, plants, frogs, insects and fish, when we start to realize there is a very real risk to human health, I am just wondering how much direction is being put towards that subject, especially as that was not the original concern when acid rain became the cocktail circuit topic of conversation.

Mr. Scott: I think I can clarify a few things for you. One is that the recent reports of health-related research in this area are very new. It is quite significant that the bulk of the papers that exist in the literature in this area is either a direct result of work done by the Department of National Health and Welfare or an indirect result in that the American researchers who published the paper were actually paid by Health and Welfare Canada to do the research; it is a brand-new area.

The lung function losses that are reported in Dr. Franklin's work are being very seriously challenged by some of the senior scientists in the US. Their enthusiasm to challenge the results may be motivated by other than purely scientific concerns--I am not sure--in that they are not being

challenged by people who have medical or epidemiological backgrounds but rather by plant scientists and materials research people, but it is brand-new work.

The Canadian program is very small. Relatively speaking, it spends very few dollars and is making an enormous impact. We are all very excited about the results that are coming out and we are very keen to make sure that it is good science, that the results are sound and that they will withstand the challenge by senior experts from all over the world.

A number of American studies are under way. Again, Dr. Franklin and her peers and cohorts within the Health and Welfare Canada for the most part deal with these people on a first-name basis because so few of them are actively involved in the US and Canada.

Your timing is quite incredible in that a year ago there would have been no comments about health; there was very little concern about health. We would have had nothing really to discuss at this point; so it is brand-new.

With regard to your question about whether there are multidisciplinary committees, a year ago the Health and Welfare Canada people found it very difficult to get anyone to sit on committees with them. This year, after they have their results, there is a lot more enthusiasm.

Senior people certainly from Ontario are present on the federal-provincial committees that are looking at co-ordinating all the health effects research that is funded by the provinces and the federal government. Those committees are in place now; they are dynamic now. That is a very new phenomenon and we are there. We do not have a long history and not a lot of money has been spent in this area in the US or Canada.

Mrs. Marland: You are saying that senior people from our provincial Ministry of Health--

Mr. Scott: Are now sitting on the federal-provincial committees.

Mrs. Marland: Why would Health and Welfare Canada pay US researchers? Was it because there were no Canadian ones available with that specialty?

Mr. Scott: No. It was more that these people were working in an immediately adjacent area. They were already measuring inhalation of a certain particle size; they had done a lot of developmental work, and for a few dollars, we could have them do one more test that would help our work instead of spending a lot of dollars to duplicate their equipment, their instrumentation and their expertise in Canada. It is more that with the few dollars available they are maximizing their return.

Mrs. Marland: How big is the step from acid rain to toxic rain? I know the difference in terms of human health, but is that one giant step or is it a few inches? What are we talking about in terms of social concern?

Mr. Scott: In Ontario, when the first acid rain program was being put in place, it was appreciated that acid rain was a term that would probably live for a long time in the mind of the public and that for many people it would have a lot of different definitions.

In Ontario, since the early work in 1979, we have always included in our definition of acid rain, long-range transport of toxics, organics, metals,

sulphur, nitrogen, ozone and all of those contaminants. We use the term very broadly to include all those components. For us it is not a step; we are there already.

Within our deposition monitoring, we are looking at metals and at developing a technology for organics. Last week, we actually amazed some US researchers that we have five years of good data on trace metals in Ontario. They are just trying to set up networks. They do not even know how to measure it yet in some areas.

We are there. In the science area, we have been collecting information and trying to figure out what the extent of the problem is, how it is impacting in the natural environment and what the effects are. If it is impacting on fish and we are looking at sulphur in these fish, then let us look at these other things in the same test. That is the way our program has been run.

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Mrs. Marland: The reason I asked that question was that I did not know that our ministry viewed them as one and the same. I thought toxic rain was the worst-case scenario and not just acid rain.

I do not know where this fact sheet came from. I think it was in our package. It is by Debbie Reid. When you see there the highlights and the listed health hazards for humans, if everyone were aware of what those human health hazards were, it would not take us so long either south of the border or north of the border to convince the politicians and the responsible corporate citizens who are responsible for making the decisions to realize we are not just talking about animal and plant life.

Mr. Scott: Perhaps I should clarify one thing. When I answered your question about how we consider toxics, I was speaking from the point of view of our current ongoing scientific program, our monitoring and how we are running our experimentation and what our scientists are looking at. I did not answer it from the point of view of what is included in the Countdown Acid Rain package, because it zeroes in specifically on sulphur from the four major sources and includes the provision I mentioned about NOx for Ontario Hydro, but that is all. We are looking at those controls.

With regard to what the problem is out there and what we should be doing about it, we are leading the way in looking at the substances; we still do not know all the answers, but we are not locked into having to study it until we know every answer before we are prepared to recommend to the policymakers some options they might be considered in the control program.

There is still lots that is not known about acid rain. As you have seen, there is a lot that is known. You have a lot of paper so far, but in Canada we have decided that in our government we know enough to make decisions and commitments about the future, and we are going to clean up our emissions and improve our conditions by doing what we can inside Canada. We are going to use every method possible to get the Americans to undertake a similar program with their emissions.

Mr. Chairman: Mrs. Marland, you will be happy to know that over the noon hour the steering committee decided we would be reporting to the committee later this afternoon that we should ask Dr. Bonnie Stern or Dr. Franklin or somebody to appear before us with respect to the health effects of

acid rain. We are hoping that on March 5 we can have somebody here to address those concerns, which I think are very valid concerns.

Mr. Scott, thank you for appearing before us. I have one final query with respect to the response of the ministry to the second progress report. I do not believe we have anything other than a press release that was issued by the ministry. Would there be an official response to that during our deliberations?

Mr. Scott: The document is currently in draft form and we have a small dilemma in that it is just a matter of putting it in the right covers and making it available. Maybe I did not note here that it has been a best seller. We have been distributing it widely to our friends and contacts in the US, who have been making sure the appropriate Americans have been reading it, and we have received a lot of requests for it from the US.

We are attempting to make sure it is properly formatted and is available. The wording is essentially finished. It is just a matter of putting it in between the right covers and putting it into both languages and doing those kinds of things.

Mr. Chairman: Mr. Scott, I can assure you this committee, although both languages would certainly be appropriate, is not worried about the covers; it is the insides--

Interjection.

Mr. Scott: Certainly. I would certainly be in a situation to provide to the committee the general comments within the report. In fact, I would probably be prepared to provide the detailed comments upon my return. My only situation is that I would prefer to put it out in hard cover when we can make it available to everyone as opposed to having to go through here, but the information contained therein is fairly straightforward.

Mr. Chairman: We would appreciate if we could receive that at an early date and if the final document is available when you are next back, which I think is March 11, that would be appropriate.

Mr. Scott: Now that my presentation is over here, getting a document out is my next priority.

Mr. Chairman: We cannot hold you up any longer. Thank you very much, Mr. Scott.

MINISTRY OF NATURAL RESOURCES

Mr. Chairman: Our next witness is from the Ministry of Natural Resources; our agenda indicates it is Dr. Douglas Dodge, who I hope is also with us, but I understand the assistant deputy minister for southern Ontario, Mr. Burgar, will be making the presentation, if Mr. Burgar is here.

Mr. Burgar: In response to your hope, Mr. Chairman, Dr. Dodge is here. He and I and other members of the staff will be available for questions after we have completed the brief opening statement, if I may.

I am pleased to have the opportunity to present to you and outline for you what the Ministry of Natural Resources is doing to document the effect of acid rain on those natural resources of the province, for which we have management responsibility.

Natural Resources provides support to the Ministry of the Environment, which as you well know is co-ordinating the province's effort on this issue. Our role is to monitor the impact of acid rain on three specific resources: the forests, the fisheries and wildlife.

We are also supporting research efforts by other agencies at the universities and in the federal government, which have been undertaken to reach an understanding of the procedures whereby acid rain affects those resources. In addition to finding out what is actually happening to the resources, we are also examining possible mitigative measures in conjunction with the Ministry of the Environment.

To accomplish these ends, MNR has carried out several programs in each of the three areas over the past five years. In the area of forestry, many of the research programs that are providing an insight into this problem were actually launched several decades ago, and although monitoring the effects of acid or other air pollution, that was not the original and specific goal when those research projects were started.

I will describe briefly the efforts we have undertaken in the three specific programs.

In the fisheries programs, to determine the effect of acid rain on our fish resources, Natural Resources has, in conjunction with the Ministry of the Environment, implemented a fisheries acidification program designed to appraise the loss of fisheries resources due to acid rain and other air pollutants.

To date, we have completed chemical surveys of over 2,000 lakes and assessed the presence of fish species in 200 lakes. We now have data on 38 per cent--that is 828 lakes--of the provincial lake trout lakes, 34 per cent of the brook trout lakes, 31 per cent of the smallmouth bass lakes and 20 per cent of the walleye lakes in Ontario.

The preliminary results show that four per cent of the lakes in Ontario are acidified, and another 17 per cent are extremely sensitive. Most of the affected lakes, which I do not think will come as a surprise to anyone, are in the Sudbury area.

Our findings indicate that brook trout lakes appear to be most susceptible to acid rain, because most of them are clustered in the parts of the province that are most highly affected by acid rain. In addition, these lakes are also relatively small in size, at higher elevations and low in natural alkalinity.

Although most lake trout lakes--55 per cent--are also located in parts of Ontario most exposed to acid rain, they are generally larger in size than brook trout lakes, somewhat lower in elevation and higher in alkalinity and therefore not quite so susceptible to the effects of acid rain.

Our research also indicates that some behavioural traits may offset some of that lack of susceptibility. Lake trout spawn near the shore, often in very shallow water. Highly acidic runoff water tends to collect in those areas, which can be toxic to these fish. Moreover, this runoff occurs at a time that coincides with the extremely sensitive developmental period--between hatching and emergency--and likely increases the possibility that trout will not survive to maturity.

I would like to emphasize that these findings are only preliminary. More research is needed before we can develop an exact picture.

We have also been conducting experiments with the Ministry of the Environment to test the feasibility of neutralizing lakes as an interim remedy. I may say here that we emphasize this is an interim remedy. We are fully in agreement with the Ministry of the Environment that the ultimate solution is to reduce the amount of SO_2 . We treated two lakes in the Sudbury and Parry Sound areas. No negative effects were observed and in Bowland Lake near Sudbury, lake trout were successfully reintroduced and subsequently spawned. An evaluation of this project is continuing.

In the forestry area, Ontario's forests do not show identifiable evidence of damage caused by regional air pollution, other than what has historically occurred from point sources of emission, such as near Sudbury. However, Ontario's forests do show signs of declines, diebacks and unthriftiness. Much of this is related to the character of the sites where the trees are growing, to age and to harsh climate, or to traditional natural catastrophies, such as fire or attacks by insect and disease.

Air pollution is a relatively new stress on our forests. Its effects must be deciphered and separated from the natural process to determine exactly how it does influence our forests. The Ministry of Natural Resources is just one of several agencies which, in co-operation with each other, are doing work on the relationship between air pollution and forest growth. The other agencies include of course the Ministry of the Environment, the Great Lakes forestry centre of the Canadian forestry service and several universities in the province.

Because it can take up to 80 years under ideal conditions for a forest to grow from seed to a mature stand of trees, any study of forest growth must of necessity be done on a long-term basis.

Part of the mandate of the Ministry of Natural Resources forest resources group has been to study Ontario forests to provide for their better management. As a result of the longer-term forest management studies, many of the studies which are proving useful in monitoring the effect of acid rain were actually begun several decades ago, but without the specific intent of monitoring the consequences of air pollution.

One such study compares growth rates of young jack pine in the 1960s to the 1980s to the growth rates of stands of the same relative age in the 1890s to the 1920s. This comparison is based on a tree ring increment measurement system. Although the study was not undertaken specifically to measure air pollution effects, no significant differences in performance between the old and the new forest were found to exist for stands sampled within the Atikokan-Fort Frances area and the Gogama district.

Northern Ontario is not subjected to the pollution levels of southern Ontario, but northern Ontario does contain the province's major base of the forest industry. Therefore, it is very important that MNR has the information to be able to respond to questions concerning the growth of this forest.

Regional studies are also under way on sugar maple. One study involves the establishment and annual monitoring for symptoms of decline in sample plots located from Cornwall to Thunder Bay. A second study is examining the growth patterns on similar plots through destructive sampling and increment

coring. A preliminary analysis of this study is due next month and an in-depth analysis in relation to climate and air pollution is to be done this year and next.

At the Swan Lake research area in the Algonquin Park area, long-term studies have been going on since the 1950s on the growth and quality of tolerant hardwood forests such as hard maple and yellow birch.

To date, no studies on sugar maple have been able to distinguish the effect or importance of air pollutants, including acid rain, or from other factors such as extremely harsh weather conditions, insect or disease attacks.

Earlier this year, the Ministry of Natural Resources, the Ministry of the Environment and the Ministry of Industry, Trade and Technology each contributed \$50,000 to support remote sensing by Moniteq Ltd. of test sites in West Germany, Switzerland and Austria. All sites had symptoms of forest stress. MNR was particularly interested in whether Moniteq's technique could be used to assess defoliation. We expect more information on the results of these tests shortly.

The varied nature of Ontario's forests and the differences in climate, soil and other conditions that occur naturally means that detailed, long-term monitoring of their growth and of changes in soil conditions must continue if we are to get an accurate picture of the effect of air pollution on our forests.

The third of our programs dealing with acid rain is the wildlife program. The Ministry of Natural Resources is particularly interested in the effects of heavy metal contamination on wildlife, and this is reflected in the nature of the studies being conducted by our wildlife branch.

A three-year study was carried out near Killarney in the northeastern region to investigate the relationship between water quality with respect to acid rain and the reproduction of the eastern kingbird. These tests also examined the metal content of the birds' diet. The study found that the metallic content of insects the birds preyed upon was directly related to the acidity of the lake. Killarney kingbird nestlings were also found to have elevated levels of mercury, compared to nestlings from buffered lakes outside the Sudbury area.

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Other studies on the habitat of wood frogs living in ponds near Sudbury found extremely elevated levels of aluminum, aluminum fluoride and inorganic monomeric aluminum. These levels were several times higher than the levels needed to reduce reproduction of these frogs and suggest that the acid rain is limiting the breeding habitat of at least three species of frogs in the area.

We are currently into the second year of several other studies, which are investigating the relationship between elevated metallic levels in animals which live and feed near acidic ponds and lakes. One study is monitoring the mortality of amphibian embryos and larvae in acidic and metal contaminated ponds.

Other studies are monitoring cadmium levels in moose, deer and waterfowl, all of which feed extensively on aquatic habitat. Preliminary work carried out by MNR in 1984 in an area north of Huntsville showed a broad range

of cadmium concentrations in moose kidneys, all the way from trace levels to those which are higher than acceptable to the World Health Organization.

In summary, I would like to emphasize that the long-term effects of acid rain on our natural resources is something that cannot be determined quickly or easily. It is something that, in many cases, must be monitored over a number of years in painstaking detail. We in the Ministry of Natural Resources, in co-operation with the Ministry of the Environment, are setting our sites on doing that monitoring.

Mr. Chairman: I note that in the press over the last couple of weeks there has been some new work done by, amongst others, Paul Hansen with respect to waterfowl. I know you have touched on waterfowl here, but I guess he looked at the diet, the acid rain effect on the smaller invertebrates or animals that the waterfowl ate and the effect on black ducks and other waterfowl of the 60 per cent cutback. I wonder if you might comment on his study.

Mr. Burgar: With your permission, we have members of the staff here who are infinitely more expert in commenting on that kind of thing than I am and with your permission I would ask them to respond.

Mr. Chairman: Certainly. Perhaps they might identify themselves. The clerk has indicated to me to remind committee members, not the deputants because you are doing a remarkable job, of making sure they speak into the microphones. If the committee members will do that to aid the translation that is going out on the French network without an exact translation, because it is hard to pick up what we are saying. If you will, speak into the mike.

Mrs. Glooschenko: I am Mrs. Valanne Glooschenko. I am with the wildlife branch as the wetland habitat co-ordinator. I have been working with the acid rain program for several years.

I would like to respond specifically to the question of the disappearance or decline of the black duck with relationship to acid rain. We are following this with some concern and we have been for some time. Actually, there may be a matter of the intrusion of the mallard into the habitat of the black duck, which may be partially responsible for that decline.

We are aware there are five species of ducks which have gone down in the last 20 years. Both the US bureau of fish and wildlife service and the Canadian wildlife service are aware of that. A lot of this is due to overhunting, particularly in the US, and also to drought patterns out west.

The case of the black duck was particularly brought up and cited as the major link between acid rain and waterfowl. We are concerned about the decline of black duck, but there is some question that the mallard has been interbreeding significantly with the black duck. There are factors other than acid rain at work here. We are following this work with a great deal of interest.

I just came from a meeting of the Atlantic Flyway Council in the Park Plaza, which is being held right now. Dr. Ankney from the University of Western Ontario in London spoke this morning. His work has begun to show that the mallard freely interbreeds with the black duck and overlaps in its range. Genetic variation is very limited between those two. In fact, in some of these cases, the genetic difference between the black and mallard are unclear.

Mr. Chairman: I appreciate your coming before us because, as with most empirical studies, they do require some investigation to make sure the hypothesis is correct, although I guess acid rain is a contributing factor to our other concerns.

Mrs. Glooschenko: We are very concerned about it. As in the case of the forestry circumstances where there are a lot of factors at play, it is necessary to follow this for at least a period of time before we are freely able to say acid rain is a direct cause in a particular case.

We are aware that breeding habitat for waterfowl in general is more limited in acidic wetlands. We know some ducks that feed exclusively on aquatic invertebrate, such as the golden eye, are unable in highly acidic lakes to have as many offspring as many other ducklings. But the direct link with the black duck is not as clear; in fact, we have more mallards than ever before, and the mallards are moving into the black duck habitat. We have to watch the whole waterfowl circumstances with a great deal of care over the next two years.

Mr. Chairman: I wanted to raise the issue because I certainly did not want to minimize the effect of acid rain on waterfowl, but I had heard that perhaps there were other factors contributing to the black duck decline.

Mr. South: Mr. Bugar, in summary, are you telling us then that acid rain is affecting water and aquatic life--and it is also affecting land-based animals--but as far as you are concerned, there is no demonstrable effects on our forests from acid rain?

Mr. Bugar: The research that has gone on to date has not been able to isolate acid rain specifically from the the combination of other stresses that are currently and always on the forest. To say that acid rain is a specific cause has not been established clearly scientifically. It is a stress. We know it is a stress and we know it adds to the other stresses, and to that extent it will have some impact on the forest.

Mr. South: In the experience in Germany with the Black Forest, as far as you are concerned, it has not been demonstrated yet that their problem is due to acid rain?

Mr. Bugar: The last discussion I had with one of our people who had been in that area indicated there was a wonderfully even division between the scientists over there, half being very convinced that acid rain did have an effect and it could be demonstrated and the other half saying, in essence, it is one of the stresses. We have not been able to demonstrate that it specifically has an effect.

We are following very closely what the Europeans are doing so that we may learn from whatever it is they learn over there. We may benefit from that. But there has not been to our scientific community a clear demonstration that acid rain has an impact or how it has an impact, if it does. That is what we are trying to establish.

Mr. G. I. Miller: A lot of the white ash basically are dying off. As you drive along in various areas, particularly along Highway 401, you will see a swampy area that is completely dead. There was good growth there at one time, but everything is dead. I have noticed that in various locations around Ontario. Is there any reason for that? Has that been a concern of the ministry? Has it made a study on that to see what is the cause?

Mr. Bugar: To my knowledge, there has not been a specific study on the white ash, although as you well know, there have been high precipitation levels over the past two or three years. White ash is a tree that likes well-drained sites. We may simply have too much water. I do not think that we have done a specific study on white ash, not to my knowledge.

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Mr. G. I. Miller: I know I can see it from spending some time in our own woodlot. They just dry at the base and if they are not cut within a few years, they topple over and are dead. It is on a fairly large scale.

Mrs. Marland: You were asking about the white ash. I was going to ask the same question about the silver birch. Are they the same family?

Mr. Bugar: No.

Mrs. Marland: Is the cause for the maple dieback possibly the same as for the silver birch?

Mr. Bugar: Since we have been unable to clearly determine the cause of any maple dieback, I am not able to say that the cause of dieback in birch is the same. The best information we have at the moment is that there are several contributing factors to the dieback in maple. It is a combination of stresses on the forest. In my earlier years, I myself have seen a dieback in birch that could be attributed to an insect. I might add I have also seen a dieback in maple, which in the late 1950s was rather endemic in southern Ontario. There did not appear to be any particular cause, except I think we would now say it was a combination of stresses on the trees, but there was never any specific cause determined that caused those trees to die back.

Mrs. Marland: What does that mean professionally when you say stresses on a tree? Are you talking about environmental stresses?

Mr. Bugar: Yes.

Mrs. Marland: Organic stresses?

Mr. Bugar: The tree requires a certain amount of nutrient and moisture. It requires some freedom from insects and disease. When everything is not perfect for its growth, then that is a stress on a perfect situation. There is a series of those things that apply or can apply. Acid rain is and could be one of them. It could be added on top of what I would call more normal stresses, such as cold winters, lack of moisture and poor growing conditions. All of those are stresses on a tree or forest.

Mrs. Grier: Just picking up on that particular question, Mr. Bugar, which of those stresses are not affected by acid rain? When I hear you say nutrients, moisture, insects or disease, it would seem to me that all three of them are likely to be acted upon by acid rain. Therefore, for you to say there is no conclusive proof that acid rain is affecting the dieback of the maples, is it not also fair to say there is no proof it is not and that all of the other stresses, to which you are adding acid rain, are themselves affected by acid rain?

Mr. Bugar: They could be. I am not sure about the insect one. I am not sure of the acid rain and insect relationship. The question of nutrients

and moisture could be affected by acid rain. I have to agree. If there is no absolute proof that it does affect trees, there is no absolute proof that acid rain does not affect trees.

Mrs. Grier: We heard this morning in a presentation--maybe it was in some of the background documents--about the ability of acid rain to leach metals and things out of the earth. Surely that affects the root growth and the nutrients of the trees. It may not be the acid rain itself falling on the tree, but it is falling on the earth around the tree and affecting other elements that lead to the growth of the tree.

Mr. Bugar: That is certainly a possibility. It can be a benefit as well. It could leach out harmful metals and it could leach out useful metals. Those cause-and-effect relationships have not been clearly established, but we are monitoring to see if we can determine whether there is an effect on the growth and then to attempt to track down what is affecting the growth.

Mrs. Grier: When we hear from the Ministry of the Environment about acid-rain-sensitive areas, I take it the determination of those areas of sensitivity is largely based on the kinds of things that come within your ministry. Is that fair, or what role does your ministry play in the determination of acid-rain-sensitive areas?

Mr. Bugar: In the sense that acid rain would have an impact on the water and, therefore, have an impact on the fishery, yes, we are obviously involved in that determination.

Mrs. Grier: What is in my mind is that, looking at their maps of the areas most sensitive to acid rain, they were not areas of high population. I am wondering if the criteria used to determine sensitivity are all natural ones rather than human ones.

Mr. Bugar: Without my answering for the Ministry of the Environment, I would say that as far as we are concerned we are looking at the waters and the effect on the fish. We are looking at the forests and the effect on the trees. We would be using the natural criteria to talk about areas that are sensitive to our programs.

Up until very recently, I think that has been the definition. The previous question arose regarding the effect on humans, and I think it was answered that that has just come to light very recently. The work we have been doing to date has dealt with the effect on the natural environment.

Mrs. Grier: It may well be that as we learn more about the effect on humans, the definition of areas sensitive to acid rain may need to change.

Mr. Bugar: It could change, yes.

Mr. Partington: The one thing that seems absolute in your report is that clearly fish are affected by acid rain. Is that true? There is no doubt about further long-term tests? If there is enough acid in some lakes it will, in effect, complicate the fish reproduction?

Mr. Bugar: In some areas, yes.

Mr. Partington: You also indicate that in those parts of Ontario exposed to acid rain, I guess fish survive where the lakes are larger in size and higher in alkalinity. Is it a fact that if the lake is big enough, you can

have acid rain for ever and it will not affect the fish, or is it sort of like pollution and if you keep putting acid rain in, it does not matter what the size is, eventually you will--

Mr. Burgar: Could I defer to Dr. Dodge to have him explain that phenomenon?

Mr. Chairman: Certainly. It would be appropriate if Dr. Dodge does come before the table inasmuch as we had him down on the agenda.

Mr. Burgar: I wanted to get him on to make your agenda honest.

Dr. Dodge: The answer to your question is, theoretically, yes, you could have a water body big enough and a base alkalinity in the watershed strong enough that, given the present loading in that area, you could buffer all of the incoming acid and not be able to detect any effect in the fish population as a result of it, but that statement is based on our somewhat imperfect knowledge of what is happening in this phenomenon and our imperfect science in knowing what is happening to some of the more susceptible life stages.

Mr. Partington: Even with current knowledge you can define those lakes that are vulnerable, and you can identify with the knowledge you have those that, with the current level of acid rain, would never become susceptible, I suppose, to no fish life.

Dr. Dodge: We have never actually ever said there are any water bodies in Ontario not susceptible.

Mr. Partington: Right.

Dr. Dodge: What we have done is look to those that are likely to be most vulnerable and spent our time on those, those that are small, that have a low buffering capacity, high altitude and in areas where we have high loading. Usually those are our trout lakes and lake trout. We have concentrated on those because I guess what we are trying to do is trying to find out what is happening to the patients likely to get sickest the soonest.

Mr. Partington: The reason I asked the question, I thought it was sort of following what I guess constitutes pollution. If you take the smaller body of water first and you put some acid rain into it, it will become affected quickly. If you have a larger body of water, it will take longer to reach its level of saturation, but then once it does, it will be just like the smaller lakes. Or is it able to flush itself out and continue on?

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Dr. Dodge: Theoretically, the answer to your hypothesis is yes, but again, we are dealing with something we have not been able to study in detail. We have generally stayed away from dealing with water bodies that are receiving very low loadings in highly buffered areas, are very large and have species that are less susceptible. Theoretically, the answer to your question is that it would take a very long time to acidify or it may never have any effects that are detectable.

Mr. Chairman: The analogy was made this morning of the patient--to use your term for the lake--being treated for the symptoms without treating the cause. If you do that, there is the possibility that other stresses may

very well be present. Indeed, your treatment of the symptom may very well be at the wrong time. Therefore, the treatment of the lakes in and of itself is not a long-term solution. Would that be the position of the Ministry of Natural Resources, that the cause is what should be corrected?

Dr. Dodge: We have taken the position that the ultimate solution is abatement at source and anything you undertake to use as a treatment in the interim should be seen as a Band-Aid effect, or a very positive effect in those lakes that are acidified and you want to accelerate the rate of recovery.

To answer the first part of your question, it has a parallel in the discussion you had with Mr. Bugar about forest resources. In many of our lakes, it is very difficult for us to separate the effects of the individual stresses, where we have an active fishery combined with a change in environment. If we can control one imperfectly and one not at all, it is very difficult to say which stress is affecting the resource more and which one is eventually the cause of its demise. So the stress analogy in fisheries is equally as difficult to tease apart as it is in the forest.

Mr. Chairman: To the extent that perhaps that interim treatment or the acceleration of getting rid of the acidity of the lake may in itself create problems?

Dr. Dodge: When we started our neutralization experiment five years ago, one of the things we looked for was a detrimental effect that might occur from actually liming the lake. The Norwegians and Swedes treated lakes with lime and they did it--I say this kindly--indiscriminately. To their surprise, they found in many cases they may have killed fish rather than retrieving anything. The shock of the abrupt change in the pH was too much for the fish and they could not adjust to it.

When we went into the experiment and treated the lake with lime, we wanted to ensure that we did not have any at least long-term detrimental effects and that what we would get out of it was a positive and true gain in resource production.

Mrs. Marland: Is it Mr. Bugar or Dr. Bugar?

Mr. Bugar: I am Mr. Bugar; this is Dr. Dodge.

Mrs. Marland: You say in your summary that the long-term effects cannot be determined quickly or easily. Within your ministry, do you have resources at this time, in your opinion, that are sufficient to do the kind of determination on this subject that you would like to be able to do or that you see is necessary to be done?

Mr. Bugar: In a general way, the answer is yes. We are able to fund the kinds of studies that at this point appear to be appropriate to determine those effects. I think everyone would say that they would like to have more money and be able to do many more things, but I think we are at an approximately appropriate level. Having determined some of these things, then whatever remedial action has to be done, we have not even got that far yet, so I do not know what kind of funding that would require. We are solidly with the Ministry of the Environment in agreeing that we need to attack the cause of the problem, not the symptoms.

Mrs. Marland: With respect to your statement that it cannot be determined quickly or easily, I am not to interpret that it cannot be done quickly or easily because it is inhibited by funding?

Mr. Burgar: No.

Mrs. Marland: It is inhibited by the amount of time of deterioration and impact? Is that what it is?

Mr. Burgar: Yes. As Dr. Dodge has said, fish life is somewhat shorter than tree life, but you have to study the effects over a lifetime and then it takes time to sort them out. It is not, in my view, a function of throwing more money at it to do it quicker. It is a function of the life cycle of the tree or the animal involved.

Mrs. Marland: A report was published in the United States last week by Mr. Hansen about the impact on ducks. Your comments on waterfowl are fairly minimal. Do you draw from other people's studies and reports or do you like to do your own for your own interpretation in our environment in Ontario? Where would his report impact your opinions?

Mrs. Glooschenko: The Canadian Wildlife Service has extensive work on waterfowl. We have some work. However, we are very well aware of what their studies are and we meet with them regularly. In fact, we are meeting with them early in March. Some of our programs are modified based on what they are going to do the following year. I would say we are working very closely with our federal counterparts on these. As each new thing comes up, generally the senior people from both the CWS and the MNR get together.

Mrs. Marland: With regard to the first three initials you mentioned, is that the one in Washington?

Mrs. Glooschenko: The Canadian Wildlife Service.

Mrs. Marland: Okay. Was Mr. Hansen not in Washington?

Mrs. Glooschenko: He was, but in that report he referred extensively to the Canadian Wildlife Service. In fact, the Canadian Wildlife Service commented on it when it came out in both the Globe and Mail and the Star, and it put a bit of a searchlight on what the Canadian Wildlife Service was presently doing, emphasizing remarks by its co-ordinator, Kathy Fischer, and emphasizing the remarks by several others.

Mrs. Marland: Is there an interprovincial and international pooling of all this information to everyone's benefit?

Mrs. Glooschenko: I would say there is. There is an upcoming meeting in Quebec City in March which is an annual meeting of all fish and wildlife agencies across North America, and at that meeting there will be a special session on acid rain.

The folks who have done the work will be there as well as people who are very much concerned, interest groups such as the one Paul Hansen represents. At that session and throughout that week there will be a lot of discussion of acid rain. MNR will have an exhibit there. There will be a lot of free flow of information back and forth.

This is just one of many examples. There are three or four such conferences per year, some of them highly scientific and some of them more geared to interest groups such as the one Mr. Hansen represents.

Mrs. Marland: There is a definite sharing?

Mrs. Glooschenko: I would say there is a great deal of communication back and forth.

Mrs. Marland: Good. Thank you.

Mr. Chairman: I believe Mr. Miller has a supplementary to your question, Mrs. Marland.

Mr. G. I. Miller: Yes, I did. Along the same lines, the committee has been established to determine what effects acid rain has on the environment and maybe to influence our friends from the south to make some corrections. It has come to my attention in particular that they have a handle on how much damage has been done to the maple forests in Quebec, and they are using that as a lever. Does the Ministry of Natural Resources have that sort of information?

I am not sure whether it should be co-ordinated with the Ministry of the Environment to come up with those kinds of tools to justify the expenditures of trying to reduce acid rain. I wonder how closely you work with the Ministry of the Environment to provide that background material. It would be useful for this committee if we had tools of that sort to work with.

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The other thing is that in small lakes in the Sudbury area, or Burk's Falls, for example, at Pickerel Lake there has been good fishing, but now they are not able to eat the large fish on a regular basis, only on a periodic basis; they are able to eat only the fish up to a certain length on a regular basis. That indicates to me that something is causing that, and maybe it justifies the expenditures and gives us some tools to work with. I do not know whether you want to respond to both issues.

Mr. Bugar: Doug, could you respond on the second one first, and then I will deal with the other?

Dr. Dodge: The effect of acidic precipitation in mobilizing heavy metals out of rock and surrounding soil into the lakes has always caused us some concern, although we have never been able to detect a direct cause-and-effect relationship between the amount of metal that the fish carries and its relative health and state of reproducibility.

With respect to our understanding of safe burdens of mercury in fish that people should be considering eating, it is quite possible that acidic precipitation is causing an accelerated mobilization of heavy metals and that these are subsequently being picked up by fish and accumulating in large predators such as walleye. Subsequently, they are less perfect for consumption by people who are concerned about metals in fish.

It is certainly a problem with the Ministry of the Environment more than the Ministry of Natural Resources. That ministry has a very active program of contract research and their own people to determine this relationship. Does that answer your question?

Mr. G. I. Miller: Can you pinpoint that to acid rain? Is there any indication it is caused by that?

Dr. Dodge: I am not completely up to date on changes in heavy metal mobilization as a result of differences in acidic precipitation. The details

of that question would properly be answered by the Ministry of the Environment or Mr. Scott. Personally, I find it difficult to determine how much of the mercury is a result of a natural leaching effect, because that area has low pH to begin with, or that which has been accelerated as a result of acidic precipitation; so we are dealing with background levels and high accumulations and we are trying to determine what levels in the fish are the result of acidic precipitation.

Mr. Chairman: Dr. Dodge, I think I have to jump in here. Is this a scientific hesitation that I have noticed on the part of the Ministry of Natural Resources today with respect to the possibility of acidic precipitation causing damage to forests or fish? It appears that the information we are getting is something that would be less than likely to influence our neighbours from the south to believe us when we say that acidic emissions are creating problems for our ecology in Canada.

Have I been hearing the information correctly from yourself and Mr. Bugar or is there indeed something for us to worry about, which we can then take to the American policymakers to suggest in a very strong way that there is a problem? Is there one or is there not?

Dr. Dodge: Could I respond for the fisheries?

Mr. Bugar: Yes.

Dr. Dodge: If the numbers we have presented today in terms of brook trout and lake trout waters and the damage we have talked about today seem to be much lower than you anticipated, then I as a scientist am not surprised that you are surprised. But there are a couple of facts in our presentation today and more information in the literature which suggest that although we have not been able to detect a lot of significant damage except in the Sudbury area, for instance, we have a very large and valuable number of water bodies out there that are very vulnerable.

We ought to be pleased that we have not detected a lot of major damage. It means that we have a breathing space in order for us to undertake control and abatement and that when we do get effective abatement we will have a resource that is not as damaged as we originally anticipated and therefore a resource that can rebound sooner and be put back into the higher production it was in before this phenomenon occurred.

I am not playing down the actual importance of the potential damage. It is just that we have not been able to detect a lot of significant damage on the ground, but the potential for damage is still very high and cause for concern.

Mr. Chairman: It might be the damage is not there right now but the trend is such that it has to be stopped.

Dr. Dodge: There is no doubt we have a lot of susceptible waters and a lot of susceptible fisheries population that go with them. It is an extreme cause for concern.

Mr. Chairman: Your comments do not necessarily make me feel better, but at least it goes along with what I have sensed from what I have seen happening as far as the environment is concerned.

Mr. G. I. Miller: I have one final question: Has there been a change in the lakes, particularly in that area, since they put up the high stack at

Sudbury? I believe that was in 1968 or 1969. Before that, maybe the readings were not there but there was no indication that they were not suitable for eating on a regular basis that distance from Sudbury. I do not want to indicate that it has been responsible, but is there any indication that the fish have not been as of good quality on the larger-size scale farther from Sudbury since the high stack was put up?

Dr. Dodge: I have no data to answer your question.

Mr. G. I. Miller: In other words, there was nothing comparable in place before?

Dr. Dodge: Not far-field effects, both before and after the stack, as far as heavy metal contamination is concerned.

Mr. Burgar: If I may in reply to your question, while we are not able to document as well as we might like all the effects of acid precipitation on the fish and wildlife, we are quite confident we do have sufficient information to know that we need to have it reduced. I think you are seeing some of the scientific concern of saying, "I would like to have everything documented" and certainly we all would, but we do know enough that it needs reduction.

Mr. Chairman: Mr. Miller had asked the question on paper woodlots. Do you want to pose the question again?

Mr. G. I. Miller: Maybe Mr. Burgar has answered it. I asked about the maple woodlots and whether there is documentation on the damage to the maple syrup industry in Quebec. I do not know whether we have any documentation for Ontario. Would it be comparable? I guess that was the question.

Mr. Burgar: We worked with the Ministry of the Environment and the Canadian forest service. We are fully aware of the studies in Quebec. We do not have a similar study that shows similar results in Ontario. If it would be of interest to the committee--and that was the question, would provision to this committee of the Quebec study be of any use to you?--we can certainly do that.

Mr. Chairman: I am sure committee members are aware of the study. However, not all of us have copies of it and I think we would be pleased to receive them.

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Mrs. Grier: In view of the lack of documentation your ministry has about the effects of acid rain or the concern, do you feel that Countdown Acid Rain and the levels established therein are an overaction to the problem, do you feel those levels are adequate or do you feel those levels are too low?

Do you plead the fifth?

Mr. Burgar: No. I do not want to do that.

Mr. Chairman: I hope our American neighbours will not do the same when we have occasion to ask them about their situation.

Mr. Burgar: I have to say that our response is to encourage the kind of reduction the Ministry of the Environment has set. I do not think we have

adequate documentation to be able to say it is too high or too low, but we know they are going in the right direction. To say they should be reduced further or could be eased, I do not think we have adequate information that would allow us to comment on that. But we know they are going the right way by reducing.

Mrs. Grier: Is the work that your ministry currently has under way designed to be able to make a more effective evaluation in the future as to whether those limits are adequate?

Mr. Bugar: The work we are doing would certainly contribute to the designation of the appropriate level, yes.

Mr. Chairman: Mr. Bugar, I want to thank you and your colleagues for appearing before the committee today. It was very informative.

Members of the committee, as I indicated this morning, I would like to spend a few moments discussing our schedule. Actually, the steering committee has met on two occasions, the latest being at noon hour, because of some hitches in our schedule. If I may, I will just go over the schedule as it is now suggested, asking for your confirmation of it, and then a couple of other items beyond that.

Mrs. Marland: Is that after this week?

Mr. Chairman: As far as this week is concerned, we have, as shown on the agenda today, Falconbridge and Inco tomorrow. I guess it is exactly as we have it today. I was just going to indicate that in the morning of this Thursday we were to have Algoma; it has declined, and I would like to have the committee discuss that afterwards. There is no change in what we have received this morning with respect to this week.

Next week, in the morning, we hope to have somebody here to speak with respect to the health concerns. We formerly had--

Mrs. Marland: Excuse me; Tuesday morning.

Mr. Chairman: Tuesday morning; I am sorry. Formerly, we had the Canadian Environmental Law Association to come in. All the organizations have deferred to the coalition and have said the coalition will speak on their behalf. We asked the coalition if it would like to take the entire day. It has indicated no, but it would like to reserve an opportunity to come back after other presentations. I will indicate the day we have suggested for that in a moment.

That leaves the morning free, and we thought we would ask for either or both Dr. Claire Franklin and/or Dr. Bonnie Stern.

Mrs. Marland: Are you still talking about Tuesday morning?

Mr. Chairman: Still talking about Tuesday morning.

Mrs. Marland: It is Tuesday morning that I have as the Lakeview visit.

Mr. Chairman: I am sorry. I started to talk about Thursday. You are right. I was thinking of the changes. Tuesday we go to Lakeview and Wednesday we go to Sudbury; we will be visiting both Inco and Falconbridge. The clerk

has asked me to ask each of you, if you are not going to Sudbury for other reasons or because you have a substitution, to let the clerk know so the person who is substituting for you can be known to the clerk.

I believe everybody has received a tentative itinerary for that day as to the time the plane leaves, but I am sure all that information will be provided to us by Tuesday--tickets and all that sort of stuff. Tuesday and Wednesday then are covered off with our travelling.

I was referring to Thursday morning when I mentioned Dr. Bonnie Stern and/or Dr. Claire Franklin.

Mrs. Marland: Okay.

Mr. Chairman: Also the district of Muskoka, Mrs. Sheila Hatch, has written on many occasions--

Mrs. Marland: Mayor Sheila Hatch.

Mr. Chairman: Correct. She is also the chairman of the acid rain committee. The steering committee suggested it would be appropriate to ask if she would come down and give them a half-hour to make a presentation to us on that same morning also.

Mrs. Marland: That is March 5?

Mr. Chairman: Correct.

Mrs. Marland: Okay.

Mr. Chairman: In the afternoon, the coalition will be with us. On the next week--

Mrs. Grier: That is Thursday, March 5?

Mr. Chairman: Thursday, March 5, yes.

Mrs. Marland: When you are saying coalition, it is the national acid rain coalition you are talking about?

Mr. Chairman: Mr. Perley and Mrs. Hurley will be here.

Mrs. Marland: Right. Thursday afternoon. Okay.

Mr. Chairman: The next week, on the Tuesday we will have independent experts appearing before us; we have not identified them, although we have a list. We have requested of several--some academic, some consultants--that they advise us as to their willingness to provide a critique and appear as witnesses with respect to the acid rain program.

I should mention some of the names we have made the request of: Professor Don Dewees from the University of Toronto; Professor Phillips and Professor Shaw, also of the U of T; a consultancy firm, E. J. Hanna and Associates; a consultancy firm, I believe called Felske; and Bill Glenn, who I believe was formerly with Pollution Probe and who had been a member of the Canadian-Ontario task force at one time. There may be one or two others I have missed.

We have asked them to appear on that day. We will have to wait until a time limit, which we have given each one of them, as to whether they are prepared to do that before we will know who will be able to appear. Tuesday, March 10, is reserved for that.

On the Wednesday of that week, March 11, Ontario Hydro will be returning to visit us. In the afternoon, hopefully the Ministry of the Environment will be back. I have already written to the minister subsequent to this morning asking the minister to appear and to request certain things that Mr. Scott has taken note of.

Mrs. Marland: You actually wrote, did you?

Mr. Chairman: Yes. The clerk did.

Mrs. Marland: You are very formal.

Mr. Chairman: On the Thursday of that day, in the morning we will have Alec Manson from Environment Canada--I think Tom Brydges from the Ministry of the Environment will also be attending--to answer questions we might have with respect to the federal and other provincial programs.

The afternoon we are reserving for the American perspective and are writing to Dick Wegman, a US lawyer who I understand is a resident lobbyist there for both the federal government and the Ontario government and who can provide us with a perspective as to where the US policy is developing. I understand there are four bills before a subcommittee and he will be in a position to apprise us of that.

That leaves us with the final week and only two days in it, April 15 and 16. I would like to reserve the morning of April 15, depending upon what the committee advises us to do with respect to Algoma. In the afternoon, the coalition could return to give us its views on the acid rain program, leaving us April 16 for a final review.

1620

Mr. G. I. Miller: I was wondering who will be attending on February 24? Will officials from the Ministry of Agriculture and Food be here? Why are they are not making a presentation? Are they not equipped to do that?

Mr. Chairman: Perhaps as parliamentary assistant you would probably be more aware than I, but as I understand it, the Ministry of the Environment was co-ordinating with the ministries on presentations today. We wrote to them in that vein. We heard back that there was another conference or something that the OMAF people in particular were attending today and would not have been able to appear today in any event, but were willing to let the Ministry of the Environment be the lead ministry with respect to appearing before us. That is the information I received.

Are there any problems with that schedule, which again is still tentative?

Mrs. Grier: I am a little concerned about the long list of consultants or experts you mentioned for one particular morning. What is their field of expertise and how many of them do you anticipate might accept your invitation?

Mr. Chairman: Because of the time constraints we have, and we may have used a shotgun approach, they all have expertise with respect to acid rain, some with a metallurgical background, some with an economics background and some with a chemical background. Some have had consulting experience with respect to acid rain in the past. From the information David has provided me, they are all capable of giving us the critique we would want.

We thought it was wise that instead of starting at the top and going down the list, we ask each and every one of them if they would like to critique and we would make the time for them, if they all happened to say yes.

Mrs. Grier: They have all been asked specifically to critique the Countdown Acid Rain program?

Mr. Chairman: I am sure we ought to come back to the committee as far as consultants are concerned, depending upon who responds to us.

The only other item I wanted to discuss was Algoma. I mentioned this morning that they have replied to our request and I have copies of their reply. I think they are being distributed already.

Clerk of the Committee: I think so.

Mr. Chairman: Could I have a copy then for myself? As you will have recalled from looking at the material supplied to us by David, they have taken the position that their emission controls were being regulated or would be kept within the limits imposed by regulation by virtue of the fact that they have closed down one of their sintering plants in Wawa. Because of that, according to their letter, they do not believe a written presentation or an appearance before the committee would serve any useful purpose.

What I saw as a concern was that there are a number of people who are observing this process and are mindful of the fact that at least one of the companies being controlled under the acid rain countdown program was not having to appear before us to answer for its rationale for keeping within the limits or its lack of development of technology. I am sure there are several other questions this committee might have in the event they were to appear before us.

I would like to take some direction from the committee as to how we should proceed with respect to Algoma.

Mrs. Grier: I certainly acknowledge that, based on the information Algoma Steel has submitted, it is unlikely at the present time that Algoma Steel is likely to exceed the limits that have been set for it, but I think the question before the committee is whether it is acceptable to allow down-sizing to be used as the way to meet the emission limits. What happens should conditions at Algoma Steel change, either by virtue of the company changing ownership or suddenly the market changing, and Algoma finding that its production is going to increase? Now that may not be likely, but it is always a possibility.

I would certainly like to have an opportunity to discuss contingency plans with them. I can sympathize with their submission at this point that they ought not to have things imposed upon them, given their current position, but I do not think we can assume that is going to go on for ever or that this current company is in fact going to be in control of that operation for ever. Who knows what could happen before 1994? I would like to see us suggest quite strongly that it come.

Mr. Chairman: I guess we should review the options we have, and I should ask the clerk as to what our options are.

Clerk of the Committee: The committee has been empowered with its terms of reference to compel anyone to come to the committee. If the committee feels strongly about it, we can go to the extent of requesting a Speaker's warrant. The usual procedure in this case is as we have done. We sent an informal letter, in a way, inviting them to the committee. They have responded, saying they will not attend.

I would say the next action we should take is a more strongly worded letter, see what their reply is and consider at that point whether the committee does want to go to the extent of requesting a Speaker's warrant.

Mr. Eves: I believe that is the normal and most appropriate course of action, if we ultimately want to request a Speaker's warrant. I certainly agree that we should perhaps issue them a more strongly worded letter, for lack of a better description.

Mrs. Grier: Perhaps pointing out the resources available to us, but our reluctance to use them, and our hope that they will respond by appearing.

Mr. Chairman: I had indicated that if we did request them to appear, it would probably be the morning of April 15. With the preliminary schedule where they had been scheduled for this Thursday morning, there certainly would not be appropriate time to communicate with them. If I take the suggestion from the committee that I write requesting again that they appear, I will ask them to do it on April 15 as opposed to the date in the original letter to them.

Mr. Eves: I think most of the committee members would be in agreement with that.

Mr. Partington: I think they have something to contribute as well. It may be sort of a novel way of meeting standards, and an unfortunate one if they are down-sizing their operation. Clearly, they have a lot to tell us about the standards of the system and how they could play a part if they were perhaps more productive at some time in the future.

Mr. Morin-Strom: I think it is a good idea that they appear before this committee. One of the points that has to be clarified is whether the down-sizing was done in order to meet these standards. The company's position generally in previous communications, including presentations in front of the standing committee on resources development, which was in Sault Ste. Marie addressing that company's down-sizing program last spring, was clearly that the environmental regulations or new limits had nothing to do with the down-sizing plan and that the down-sizing plan was conducted completely independent of what emission limits were on.

I think this is a point that has to be clarified for the committee. One of the reasons they have to come is to explain whether these regulations had anything to do with their plans for the Wawa operation.

Related to that, going back to the ministry, if the company's plans--and not only its plans but its current level of operation and planned future level of operation--are well below the new limits, are the new limits really part of an acid rain reduction program, because it would appear that the levels of emissions from Algoma are going to be the same whether that program is in

place or not? While the government is claiming tremendous progress on the emissions from Algoma in terms of this major reduction in the limits, my understanding is that was going to happen in any case. I think there are some points to pursue with Algoma Steel.

Mr. Chairman: We would certainly not have those answers unless they were here. I do recall being there myself, as you know, in Sault Ste. Marie with that committee, and they did indicate their reasons were metallurgical.

Mr. Eves: I certainly agree with my colleague. Perhaps it might even be indicated in the letter that, if for no other reason, the company might like to clarify its position with respect to its limits.

Mr. Chairman: Thank you very much. The committee will stand adjourned, as soon as I hit the gavel, until 10 a.m. tomorrow.

The committee adjourned at 4:31 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, FEBRUARY 25, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Morin-Strom, K. (Sault Ste. Marie NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office

From Falconbridge Ltd.:

Pickard, F. G. T., Vice-President, Metallurgy and Engineering

Seeley, Dr. L. E., Manager, Metallurgical Technology

Reed, G. B., Vice-President and General Manager, Sudbury Operations

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Wednesday, February 25, 1987

The committee met at 10:17 a.m. in room 151.

ACID RAIN
(continued)

Mr. Chairman: Good morning ladies, gentlemen and guests. We have Falconbridge officials appearing before us this morning. Just prior to asking them to proceed with their presentation, I believe Mr. Morin-Strom would like to suggest a resolution to the committee.

Mr. Morin-Strom: Yes. I have an issue of grave concern in northern Ontario having to do with the environment and, I believe, having to do with the terms of reference of this committee. I have some handouts. I do not know if I am going to be permitted to provide them.

Mr. Chairman: Perhaps it might be wise for you to introduce the subject matter of your resolution to members of the committee. With their concurrence, it would then be appropriate to hand out the material.

Mr. Morin-Strom: The subject matter is the low-level bomber test flights of B-52s and F-111s, which are proposed to start over a broad area of northern Ontario within the next month. As I understand our committee's terms of reference as approved on the final day of sitting, February 12, the select committee on the environment is "to consider bilateral environmental issues as they affect Ontario." In this case, we are looking at flights of major United States aircraft at very low levels, 400 feet to 500 feet above ground level over northern Ontario territory, and the possible environmental consequences of this action as well as concerns about the fact that Ontario did pass a resolution in the area of declaring it a nuclear arms free zone last fall.

I would like to move the following motion.

Mr. Chairman: Mr. Morin-Strom moves that, recognizing the potential environmental risks from proposed low-level bomber test flights of B-52s and F-111s on areas of northern Ontario, the committee request the Ministry of the Environment to provide the committee with copies of the initial environmental evaluation prepared by the United States Strategic Air Command on the low-level bombing test flight paths that are planned over northern Ontario, plus copies of provincial responses to this proposal, along with other information on consultation that has gone on between the Ontario Ministry of the Environment, the US Air Force, the Canadian Department of National Defence and the federal government.

I have noted the resolution put forward by Mr. Morin-Strom. Prior to the proceedings, I indicated that, in as much as we had scheduled our hearings for the balance of the time allotted to us and decided to deal exclusively with acid rain, it would be up to the committee to decide whether it wished to accept that resolution as something this committee should debate and decide upon. If they did, I would then accept it as a notice of motion for us to talk about at a later date, certainly in an effort to give everybody appropriate time to review the material Mr. Morin-Strom has. The earliest would be tomorrow, and we sit only in the afternoon tomorrow.

I cannot rule that the resolution he has introduced is out of order, because it does come within the framework of bilateral environmental issues, so it is a matter of the committee deciding. I open it to the committee.

Mrs. Marland: Just where you have finished off, could we not sit tomorrow morning if we decided this was important enough or do we have to have 24 hours' notice of when we are sitting? I do not know the wish of the committee.

Mr. Morin-Strom: Do I get an opportunity to speak to this in a little more depth?

Mr. Chairman: I want the matter open to the committee. We are not discussing the resolution as such. As I indicated, that cannot be debated. I would take it as a notice of motion and we would discuss the motion at a later date. I have opened it to the committee, and, after I respond to Mrs. Marland, if you want to be next on the speakers' list, that is fine.

The committee is able to schedule a meeting tomorrow. We do not need 24 hours' notice for that.

Mrs. Marland: The other question is, when are the flights scheduled to take place?

Mr. Chairman: I believe they are scheduled some time in the next month.

Mrs. Marland: Before the next two weeks?

Mr. Chairman: Perhaps Mr. Morin-Strom will be able to answer that question.

Mr. Morin-Strom: I have a copy of a press report here which indicates the US Air Force bomber flights are to begin on March 8, according to this release dated February 17 from the Globe and Mail.

Mrs. Marland: I agree that it is certainly within the purview of the committee to have this as a notice of motion. If the flights were to start as early as March 8, then I would like to see the committee deal with it tomorrow, if possible. In saying I agree that we should deal with the motion, I do not think it takes very much common sense to recognize that flights at that level and at their speeds--the B-52 is not a very fast aircraft, but certainly the F-111 is a very fast aircraft. I personally have some experience with aviation. I do have a pilot's licence. I do not fly F-111s or B-52s, but I have flown a Voodoo CF-101, which is a little comparable. It is an early version of an F-111. Then, dealing with acid rain, we are talking about the movement of air. We are also talking about the impact, particularly on wildlife rather than plantlife. I think that the flight paths that would be dealt with in this discussion of Mr. Morin-Strom's could be very important to our responsibility to the province in terms of the environment.

I would certainly like to see us deal with his motion and, as tomorrow morning is free, I do not see it as an interruption in our schedule of commitments, to deal with acid rain at this point.

Mr. G. I. Miller: I think we have things to deal with. The committee is established and we have a schedule to go by. If we want to deal with the resolution next week, perhaps that would be adequate.

I guess it is a federal responsibility. They must have jurisdiction over the fact that they can make these plans and it has to be dealt with at the federal level. I think we could make them aware of our concerns and they are the ones that will have to deal with it officially as far as an international training exercise is concerned. We have people here this morning and I do not think we should waste time. We are not getting off to a very good start anyway, and I think we should listen to and go according to the schedule we have already in place.

Mr. Morin-Strom: Speaking to the timing and the importance of addressing this issue, this is not strictly a federal matter. While the final decision may be a federal matter, in fact there is a process for consultation with the provincial government. Before we get to the final vote on this issue, which may be tomorrow or whenever the chairman of the committee rules we get to that matter, I would like to provide some information.

In particular, I have copies of air force information packages on similar routes, which were proposed for western Canada; one over British Columbia and another one over Alberta, Saskatchewan and the Northwest Territories. These information packages include a focus--one section, page four, on environmental studies and review procedures. These were prepared by the U.S. Strategic Air Command for routes in western Canada, identical to the types of routes planned for over northern Ontario.

It states quite clearly: "An initial environmental evaluation, IEE, is required for each route proposal. The IEE will provide a description of the proposed project and an overview of the existing biophysical and socio-economic environment and will identify potential impacts and measures that may be used to mitigate or ameliorate any anticipated adverse effects. The primary concerns associated with the proposed aircraft overflights are expected to be noise-related disturbance to wildlife and people within or adjacent to the proposed corridors. Nevertheless, other potential environmental and socio-economic concerns will be identified."

An independent consulting firm has been contracted to conduct the environmental studies and, in the case of these western flight routes, copies were provided in the consultation process to Environment Canada, as well as Alberta Environment, the Saskatchewan Department of the Environment and, in the case of the British Columbia flight, the British Columbia Ministry of the Environment.

There has been a process for this consultation before the final decision has been made. It would appear that a final decision has been made in the case of this new Ontario flight route and I think it is important that we do address this issue and find out what concerns have been raised by Ontario's Minister of the Environment and whether, in fact, this consultation has occurred with the province.

Mr. Chairman: Just to clarify your resolution which you have brought forward, your handwriting is extremely good but I am having a little bit of difficulty. Am I correct in reading that what you are requesting of the Ministry of the Environment is a report from them?

Mr. Morin-Strom: Yes, I am requesting the same report which was provided by the department of the air force in preparation for flight approvals on similar operating routes in western Canada, according to this document, and which therefore should have been provided as well to Ontario for the Ontario flight route, as well as any other consultation that has gone on

between the provincial government and either the federal government or the US air force, and any formal responses which have been sent from the provincial government.

1030

Mrs. Marland: When we deal with the resolution, I do not think that issue is going to be a heavy duty, no-way kind of thing. We all recognize that high-level training flights take place all the time and we do not have any difficulty with that.

As a matter of fact, the only part of the comments of the mover of the motion that I have difficulty with, of course, is the fact that, in his preamble, he said we have decided to be a nuclear arms free province. This has nothing to do with that, because we are not talking about aircraft that are carrying nuclear arms. That is not in the resolution and I want to make clear that I dissociate myself from that preamble.

With respect to Mr. Miller's comments, yes, we do have a very good agenda for the next three or four weeks. It is very complete and it is dealing with acid rain. However, with respect, Gord, we do not have anything on our agenda tomorrow morning. I think it is very significant. We may find out that your provincial ministry, Mr. Miller, with respect, has not been notified. I think it would be rather embarrassing if we find out that we in Ontario have not had the opportunity to do the examination of those flights ahead of time such as was done in western Canada. I think we have a very serious responsibility here to make sure we have all the information that is needed, prior to the flights which are perhaps starting March 8.

Mr. Chairman: I indicated at the beginning that I was looking for some direction from the committee as to how we should proceed. I think we have had a fair amount of discussion on the matter. I would like to request the committee to direct, by way of motion, whether we will debate this particular resolution at a later date.

Mrs. Marland: I would move that we deal it with it tomorrow morning at 10 o'clock.

Mrs. Grier: Will the ministry officials be here?

Mr. Chairman: My understanding is that, as I indicated, I would accept it as a notice of motion. We would debating a motion. We would not be involved in carrying on what the intent of the motion was which, as I understand, was to ask for a report from the ministry officials.

Mrs. Marland: As the mover who suggested that we deal with the motion tomorrow at 10 o'clock, I think in the best interests of everybody and in order to expedite the decisions that, as Mrs. Grier suggested, we obviously need some resources to help us with our discussion. Yes, we would need ministry officials here.

Mr. G. I. Miller: Would it be possible to deal with it tomorrow morning then? I am not against doing that, as has been suggested, if we can, but we do need to notify the minister and, Mrs. Marland, he is not my minister. He is our minister. I would like to clarify that.

Mrs. Marland: Thank you.

Mr. G. I. Miller: In my view, as we do have a morning that is free and as long as we have the tools to work with, there is no reason not to.

Mr. Chairman: If I am gathering a consensus here, could I ask Mr. Scott or someone from the Ministry of the Environment who is in the audience to indicate if they would be in a position at as early a date as tomorrow to be able to address that topic? Mr. Scott, were you listening to our discussion?

Mr. Scott: Yes.

Mr. Chairman: Unfortunately, we will have to ask you maybe to take the chair beside Mr. Morin-Strom.

Mr. Scott: I can certainly undertake to find those individuals within the ministry who are familiar with this program and make arrangements to attempt to have them here tomorrow. All I can promise is to do my best, recognizing the short time frame.

Mr. Chairman: Thank you very much, Mr. Scott. Without having to take a vote within the committee then, I think I have a consensus that we will proceed with the motion to debate it tomorrow morning and have Ministry of the Environment officials here as resource people to help us in our debate.

Thank you very much, committee members. I think Mr. Morin-Strom has some material he will be handing out to everybody for review over the evening.

Mr. Pickard, my apologies. Sometimes the committee does get into other matters. I appreciate your indulgence and patience. I appreciate your being here this morning to present Falconbridge's assessment of where the company is at in the acid rain abatement program. I would like to turn the proceedings over to you. I believe you have a slide presentation you would like to present to us. You might introduce your colleagues.

FALCONBRIDGE LTD.

Mr. Pickard: Yes, I will. My name is Frank Pickard. I am vice-president of metallurgy and engineering for Falconbridge Ltd. One of the areas of my responsibilities is the environment. I have with me this morning George Reed, who is vice-president and general manager of the Sudbury operations, and Dr. Larry Seeley, who is our manager of metallurgical technology.

We have provided to the committee copies of the two semi-annual reports that were required under regulation 661/85, with respect to what is commonly called Countdown Acid Rain. We also provided a copy of a brochure that Falconbridge issued about three years ago, called Keeping It Clean...Everybody's Business. I want to take a few minutes to run through some of the pertinent data that are in that first brochure to give you a background of where Falconbridge has come from with respect to reducing emissions of sulphur dioxide. Following that, Dr. Seeley will give a presentation which briefly summarizes the data that are in the two reports to the ministry.

Could I have the slide projector turned on? Larry, could you slide around and flip the switch? Give it a little nudge.

Mr. Poirier: That is the effect of acid rain.

Mr. Pickard: No, this is one of the government slide projectors. I think we should have brought our own.

Mr. Chairman: We should tell the television audience we are taking a rest because of technical difficulties.

Mr. Poirier: Do not adjust your set.

Mr. Pickard: We had this problem when we first plugged it in.

1040

Many of you are probably familiar with the Sudbury landscape. It was not always that way. This picture was taken about the year 1900 and gives you an idea of the size of the timber which was actually there to be cut. What started the Sudbury landscape on to the scenario most people are familiar with was the use of roasting yards for the smelting of ore. These used a lot of hardwood and softwood to smelt the ore over open fires.

This is one of the former yards, around 1915, I believe. In a picture of this same area, taken in the late 1970s, you can still see the remnants of that huge roasting yard, but the vegetation has started to come back. I warn you that you may see the same picture this afternoon from Inco, because I think this is its photograph.

Falconbridge looked like this in 1917, before Falconbridge Ltd. had started any operations. This was a diamond drill camp of the E. J. Longyear Co. of Minneapolis back in 1917. You can see the landscape has been completely denuded of all timber. Everything has been cut and used for some purpose, either to make lumber or for the roasting yards that were in operation. This is the same area about three years ago. It is not quite the same spot, because actually the area where the first picture was taken has been altered by mining, but you can see that the landscape has improved considerably.

Falconbridge has a record of having consistently met or bettered the various emission levels set for it under a variety of control orders. The blue line on this chart shows Falconbridge's actual emissions. The white line shows the various control orders that Falconbridge has operated under. The control order we are currently operating under is a 55 per cent reduction from what we were allowed in 1970. We are significantly below the allowable level in that latest control order. In fact, we are now down at a level of around 80,000 metric tonnes of SO₂ emissions per year. This is partially the result of the lower production levels we are operating at.

I think everybody is aware the nickel market is quite depressed. The price of nickel on the London Metal Exchange this morning was \$1.74 a pound. Back in 1982, we were getting \$3.20 a pound. As a result, we have curtailed our production significantly, which is one of the reasons we are down so low. Even if we were running at a rate of capacity of 88 million pounds, we would still be below the control order level.

We seem to have taken 1953 as a starting point on a lot of the things we are talking about. One of the main reasons we have taken 1953 as the starting point is that it happens to have been a year for which we have pretty good records for what was going on. If we go any earlier than 1953, we get into the problem of trying to recreate some of the documentation.

In 1953, we were emitting 83 per cent of the sulphur in the ore up the

smokestack as sulphur dioxide and were fixing 17 per cent of it. The 17 per cent fixation was the sulphur in the ore which was either being discarded as tailing in the flotation process in the mill or a small percentage that went into the solid slag which was discarded. Another percentage of it went into the nickel-copper matte. So 83 per cent of the sulphur was going up the stack and 17 per cent was being contained in some manner.

All these data are based on a production rate of 88 million pounds per year. We are not considering whether that was the rate we ran at that time; we are trying to make apples and apples so you can see what we would have done at a consistent production rate. At that time we would have been emitting 1,623 metric tonnes of sulphur dioxide per day.

By 1960, as the result of revisions that were made in the milling process, we were emitting only 50 per cent of the sulphur, and 50 per cent was being fixed in one form or another. We still did not have an acid plant at the smelter and our total emissions had been reduced to 1,193 tonnes per day. On the left is the 1953 comparison.

By 1977--and this is just prior to the time we started up a new smelting operation to comply with a control order--we spent in dollars of the day \$83 million to modernize our smelter and provide an acid plant. That started operation in 1978 and 1979. Prior to that, we had got up to 73 per cent fixation, primarily as a result of revisions in our milling operations, and our emissions at that point in time were 641 metric tonnes per calendar day.

In 1980, the new smelter was operational, and at that time we had 18 per cent emissions, 82 per cent fixation. This is exactly the opposite of 1953. In 1953, we had 17 per cent fixation and 83 per cent emissions. By 1980, we had effectively reversed the 1953 situation.

We were not satisfied with the new smelter just capturing the percentage of sulphur dioxide that was of acid. We continued to make revisions to that smelting process so that by 1983 we had 14 per cent emissions, 86 per cent fixation and the tonnage of SO_2 had dropped from 447 metric tonnes a day to 400 metric tonnes a day.

The allowable level under the control order is approximately 420 metric tonnes per day. It works out to 154,000 metric tonnes per year. As you can see, we have never sat back and been happy with just meeting control orders. We have always tried to do better.

To give you an idea of how Falconbridge's emissions compare with the rest of Canada and with the United States--and this chart is only complete until 1962--the bottom line is Falconbridge, and it just barely shows up as a blip. We are about four tenths of one per cent of the total North American emissions. The blue line, the intermediate line, is all Canada and the top line is the US. You can see Falconbridge is a pretty small blip on that. We are actually in about eighth place of the emitters in Canada and very low down on the list.

This slide shows how we have modified the method by which we have handled sulphur. If you go back to 1953, we are back looking at the situation where 83 per cent of sulphur was emitted up the stack. That is the orange section. The black section immediately above that shows the quantity of sulphur that was captured and discarded in pyrrhotite and tailing. Nickel ores contain a variety of sulphide minerals. As far as we are concerned, the valuable minerals are chalcopyrite, which is a copper-iron sulphide, being a

copper-bearing mineral and pentlandite, which is almost equal portions of nickel, iron and sulphur and then vast quantities of pyrrhotite.

Pentlandite has about 35 per cent nickel. Pyrrhotite contains at most one per cent nickel, and most of it is around six tenths of one per cent nickel, so it is actually a discard product. The mineralization is so finely associated that it is very difficult to discard pyrrhotite without also discarding some of the pentlandite, but we attempt to discard into the tailings the pyrrhotite plus the gangue material and any nonvaluable sulphides, such as pyrite, that may be in the ore.

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The black area is that which is discarded as solid waste material, and this stuff is reasonably inert. If stored properly, it causes no environmental problems. The light blue area indicates the sulphur contained in the slag and the matte. Our slag is discarded at Falconbridge, again, as a solid waste material. The matte is shipped to Norway where we have our refinery located to recover nickel, copper, cobalt and platinum-group metals. The sulphur, which is in the matte, is also recovered as liquid sulphur dioxide, which is sold in Europe. So that sulphur is not escaping anywhere into anybody's atmosphere.

As you can see, we have consistently reduced the quantity of sulphur dioxide that is going up the stack. On the right-hand side of this chart, the H_2SO_4 , the sulphuric acid, indicates what the SO_2 emissions would have been if we had not recovered a portion of that material as sulphuric acid. You can see that, without the acid plant, we would have had a lot more sulphur dioxide going into the environment.

That is it for what we have done in the past. I will turn it over to Dr. Seeley to review the current program. If you have any questions, you can ask them at any time, preferably of Dr. Seeley.

Mr. Chairman: The committee members have never been reticent about asking a question during a presentation if they felt it necessary.

Mr. G. I. Miller: Can I ask one of Dr. Pickard? Are you making fertilizer with the sulphur at your plant?

Mr. Pickard: No. The sulphuric acid we are producing is marketed by C-I-L and it is sold throughout eastern Canada and the northeastern US. Very little of it, if any, actually goes into fertilizer manufacture. Primarily, it has industrial uses--pickling for steel and some manufacturing processes that use sulphuric acid.

One of the problems is that there are no economic deposits of phosphate in Ontario. I stress the word "economic" because there are phosphate deposits in Ontario, but there are no economic phosphate deposits. You would need an economic deposit of phosphate and sulphuric acid in order to make a superphosphate that would be saleable as a fertilizer. These two elements have not yet come together.

Mr. G. I. Miller: Is there potential? I was always under the impression that there was a deposit in northern Ontario and that it might be possible.

Mr. Pickard: Yes. That is why I stressed the words "no economic." There are one or more deposits of phosphate in northern Ontario. At present, a

number of people have studied this, including ourselves, and there is no way you could economically produce a superphosphate fertilizer from these deposits. They are too far away from the acid. The market is extremely competitive and the prices tend to be depressed, so it just does not add up to something that is economically viable.

It is something I think the industry or government, or a combination of both, may be forced into eventually, because the market for sulphuric acid is not completely elastic. There is a fixed market out there and once that has been completely filled, and with the proposals to fix more and more sulphur dioxide as sulphuric acid, we are going to run into a situation where we cannot dispose of the acid.

Then a decision is going to have to be made as to whether you neutralize the acid using lime, which gives you calcium sulphate or gypsum which can be stored as a solid substance, or whether you make a phosphate-type fertilizer out of it. That decision is something that is going to have to be made at some time in the future.

Dr. Seeley: Mr. Pickard has talked about what we have done at Falconbridge. What I would like to do is to talk very briefly about how we did it, using a sort of broad-brush approach, and then talk about how we intend to meet the control order in the future.

During the period from 1968 to 1982, we spent approximately \$165 million related to environmental improvement. In today's dollars, this is approximately equivalent to more than \$300 million. Part of this was on the new smelter that was built in 1978 at a cost of \$83 million, equivalent to about \$150 million to \$170 million in today's dollars.

The research and development that was done is \$14 million, and that is about \$28 million in today's dollars. There was \$80 million spent on a pyrrhotite treatment process, called our nickel-iron refinery. Basically, this failed both economically and technically and has been closed. In doing this work, several things have been done in smelter research and development. I will give you some idea of the scope of work that has been done during the period from 1968 to 1978.

The roasting of our new smelter: There were several campaigns carried out, a 50-tonne per day pilot plant. You are looking at 30 or 40 people operating for several years to develop this process. We ran pilot electric furnaces at 25 tonnes per day, several campaigns again. We also studied reductant smelting, which is something that was new in the industry. This is adding coke into the electric furnaces and operating differently metallurgically to reduce slag losses.

Simple projects: Several hundred thousand dollars was spent on things like concentrate pumping. Eventually this ended up saving \$10 million in capital. This is just an idea of the type of things that were done to develop this new process. It is tremendously complex technology. We went to every smelter in the world--Europe, throughout Canada, North America, Australia and Japan--and brought back the best technologies we could find to put this package together. From that, we ended up with our new smelter in 1978.

Not only did we build the smelter, but during the period from 1978 to 1984 we did not sit back on our laurels; we continued to develop processes and alter the process to stop emissions of sulphur dioxide. Originally, we did not commission the reductant smelting in starting up the plant, which was in April

1978. We commissioned reductant smelting in the fall of 1978. We then carried out plant-scale test work, which I would like to say was very risky to production and to the plant, looking at increased degrees of roasting from 50 per cent through 55 per cent, 60 per cent and 65 per cent. We found ways and means of running the operation, through various technical developments, up to the 60 per cent sulphur elimination.

However, when we hit the 65 per cent sulphur elimination, we found large buildups in our furnaces. We were not able to control the metallurgy and the plant became quite unstable. This is the target we are aiming at; however, we have not found a way of getting there yet, and we have backed off to the 60 per cent sulphur elimination area.

There are other experiments, like clean smelting, where converter slag was not added back to the furnaces. Through this we found our real target was converter slag cleaning. This type of work was done on the plant scale and ended up revealing to us that a process on slag cleaning would be the way to make the smelter much more flexible and to continue up in these increased degrees of roast.

Other major developments are things like electrostatic precipitator technology. This was a highly unreliable process, or part of the process unit operation. Through various alterations, cleaning processes and modifications to this system, we have now developed very reliable gas-cleaning equipment. I think we are out in the frontiers of the technology in this area. Again, this is extremely important to anything that we do in the future.

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To give you a broad idea of what the process is like, from all this work we have ended up within Falconbridge with what I would call the class of smelters in the world. It is a showcase for most operations and we are very proud of it. In this process, these are basically plants. We have our nickel-copper concentrate which contains this pyrrhotite, pentlandite and chalcopyrite, the sulphide minerals. We go through a feed preparation plant and form a very high density slurry which is pumped into fluid-bed roasters. There are two lines in this operation. This is where we eliminate sulphur as sulphur dioxide and oxidize iron to iron oxide.

The sulphur dioxide goes through our acid plant. Here approximately 58 per cent of the sulphur is going through sulphuric acid which is marketed by C-I-L. We produce about 300,000 tonnes of sulphuric acid at this plant and, with our Kidd Creek operation, another 500,000 tonnes. We are producing 800,000 tonnes of sulphuric acid in Canada, making us by far the largest producer. It is about two thirds of what C-I-L is marketing.

Then the tail gases go to the stack. The calcite comes from the roasters and goes into electric furnaces. The gases from the electric furnaces containing about five per cent of the sulphur go through gas-cleaning equipment for removing solids, but about five per cent of the sulphur is going directly to the stack.

The slag from the electric furnace contains about 3.5 per cent of the sulphur. This is fixed in the slag, is not environmentally hazardous and is dumped to waste. The matte from the electric furnaces goes through a converting process and, in this process, we are continuing to blow this sulphide down with air and combine the iron oxide with silica to form slag. The slag is going through a slag-cleaning process now and back into the electric furnaces.

This is where our major emission of sulphur dioxide is: About 20 per cent of the sulphur into the smelter goes up the stack from this operation after gas cleaning. The remainder of the sulphur is going into the matte which goes on to our refinery, and here we remove that sulphur. It is fixed again as liquid sulphur dioxide which is marketed in Scandinavia.

When look at the future and future needs of processes, we would like the committee to remember we have to meet several needs simultaneously, and this makes the problem extremely difficult for us when we look at new technologies. I will go through some of these needs very briefly. The first is that when we look at new technology and equipment, we are looking at about 20 years of life, so the criteria for doing something for today will not work. We have to develop technology that will last for 20 years.

Number one is industrial hygiene and occupational health and safety. Any new technology we put in must look at this factor. In our business, we have nickel, sulphur dioxide, various types of dust, silica, impurities such as lead, selenium, arsenic, tellurium and so on. Our equipment must be very efficient and well developed. A lot of technology has to go in and a lot of demonstration of technology has to go in to be able to meet these targets.

Number two is capture of sulphur dioxide, which we are talking about today. There are two elements to this. First, the Countdown Acid Rain aspect, and for us, there is the ground level concentration effect locally. We see the need for capturing sulphur dioxide as meeting both these elements.

Number three is the increased metal recoveries. This is extremely significant. The whole process is based on oxidation and reduction, and we must have a process that does not reduce in loss of metal. If we put our ore body into slag, then we are out of business, and increased metal recoveries are an extremely important part of the business. Even if we stay where we are, it is not good enough. We must increase metal recoveries and make these ore bodies, which are becoming lower grade and so on, more economic.

Number four is lower competitive operating costs. We must put in processes at lower operating costs. There are now 30 producers in the world. It is more and more a commodity type of business, with nickel going into stainless steels. There is a lot of competition, and we think the only way we can stay in business is by being in the lower quartile of the low-cost producers. If we are not there, we are vulnerable to being closed economically.

Number five is conservation of capital. You might say that in the old heydays with six per cent interest rates, capital could be spent quite liberally, but with interest rates as they have fluctuated in the past few years between 10 per cent and 20 per cent and with our costs being relatively constant, we cannot put in a great deal of capital. The interest cost or the cost of capital is often more than the operating cost in a lot of these new plants that are being looked at.

Number six is the increased productivity. The nickel price is not set by us; it is set by the world. We are price takers. The prices we are dealing with right now have dropped 25 to 30 per cent in the past year, while the wages have remained constant. The only way we can stay in business in the future is with increased productivity, which means that if we are going to produce at the same level as we do now, we must produce with fewer people and we must put in technology.

These are some of the needs that are met, and the smelter we have built

meets these needs. When you go through this, I think you will find it is an extremely clean smelter. We are now capturing sulphur dioxide. We have increased significantly the metal recovery of both nickel and cobalt. We have probably the lowest operating costs of a smelter that we know of and we have tremendously increased productivity in the smelter.

Looking at what we need to do in the future, from 1984 to 1985, we analysed many different ideas and approaches to how we are going to take the next step. With Hatch Associates, we have looked at approximately 33 alternatives, and we have ended up with more or less three major targets at which to aim our technology over the next period to meet this control order.

The first area is pyrrhotite rejection. Frank explained what pyrrhotite is. Pentlandite is highly disseminated in the pyrrhotite. The milling process is a physical separation. You might say it is like removing pepper from flour. That is the type of approach, so you are dealing with very fine material.

You have this intergrowth of pyrrhotite and pentlandite, and such things as grinding technologies, classification technologies, process control in a plant, sensing devices on stream, new unit operations such as column flotation and so on, new reagents and new equipment must be looked at to take this area of technology up to another plateau. This will involve a lot of lab work, pilot plant work and plant work, and we see the period of time for us to be able to continue to increment this pyrrhotite rejection as being in the range of five to seven years.

The second area is continuing to increase the roaster sulphur elimination. The target we are aiming at is 65 per cent. This gets into looking at the off-gas handling capacities, the sulphation. We are going to be operating at higher temperatures, and we need to look at acid plant capacities, modifications and so on. The main problem is the downstream effect of higher oxidized calcine, which ends up in higher matte grades, which end up in higher slag losses. Dealing with that technology is a major concern in electric furnaces and then, further downstream, how we are going to deal with the converter aisles? There is a tremendous amount of technology needed to be developed.

The third area is converter slag cleaning, in which we have made tremendous strides. Basically, this process ends up making the smelter much more flexible in metal recovery and allows us to do more things in the increased degrees of roasting without losing too much metal, such as cobalt and nickel, to the slag.

I would like to emphasize that what we have done so far in technology has been tremendous. We have made tremendous developments, but I would say it has been the easy part of the story. The next part is going to be much more difficult, and we are definitely in the frontiers of the technology area.

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The fourth area we have been working on is plume modelling. We have a ground level concentration control order, and we have been working towards controlling to fix the monitors in modelling our plume and attempting to develop a system that is satisfactory to the Ministry of the Environment. Currently, we see with our short stack that this is a very difficult problem for us, that really the only approach we have is by stopping emission. This is what this program up here is aimed at doing.

Looking at where we have to go, if we look at this graph, we have the

nickel production across the bottom going from 60 to 100 million pounds, and we have the smelter sulphur dioxide emissions in metric tonnes per calendar day or in metric tonne per year on this side. This is the control order at present, and with our 50 per cent roast, this ends up in a capacity of a smelter of 88 million pounds. Again, for us to stay economic, we believe we must maintain capacity. If we let the capacity drop, we will become less economic, and I think all of us know what that means.

We are operating today in the range of a 60 per cent roast, and our emissions were about 80,000 tonnes in 1986, around the 250 tonne per day level. I think we have made tremendous strides in stopping these emissions. The problem, though, is that, our capacity being here, we hit this line of roaster raw cast capacity and various other metallurgical things which stop us and we have to go in this direction, which ends up in more emissions. This technology we are aiming at--the pyrrhotite rejection, converter slag cleaning and increased degrees of roast--is aiming at getting us to this point right here on the graph. That is what we are targeting at.

Just a couple more on costs: From 1984 to 1986, we have spent approximately \$7.3 million for research, development and demonstration. The work has been mainly targeted at the converter slag cleaning area, and that is still under commissioning, and the pyrrhotite rejection, which was a new magnetic separation circulator at our Strathcona mill, and that is still under commissioning as well. We also spent almost \$1 million on this ground level concentration control modelling system.

In the next two years and subsequently, we see these types of dollars being required. We have not committed ourselves to all this at present, but in the order of \$3 million per year is what we are estimating. That, again, includes research, development and demonstration, mainly aimed at the increased degrees of roast area and the pyrrhotite rejection area. If we look at the 10-year type of program, we are looking at spending in the range of \$26.1 million on R and D and demonstration. Our objective will be to try not to spend that much money.

I think I would like to leave it at that point. I emphasize the need for all these different technologies.

Mr. Chairman: Thank you very much, Dr. Seeley. We are looking forward to visiting your smelter next week. Mr. Pickard, are you ready now for questions from the committee? I wonder if we might prevail upon you to provide us, at your convenience, with hard copy of the slides that were presented today.

Mr. Pickard: I think you will find the data in the slides are all in the two reports plus the coloured brochure. It is just split out so it shows up a little better. Instead of long tables, we have condensed it. There is only one slide that you do not have, and that is the graph. I will give you hard copies of it.

Mr. Chairman: Thank you. Any questions from members of the committee? My goodness, I think everybody must think that Falconbridge has done excellently.

Mr. Pickard: I think we put you to sleep.

Mr. Chairman: Actually, I have one question with respect to your research and development costs. You indicated costs of somewhere around \$26

million up to 1994. I guess that is a slight increase from what you indicated in your second progress report. I think you indicated somewhere around \$23 million at that time, but that was, at best, a ball-park kind of figure. I wonder then whether you will be in a position by the target date, the end of next year, to have ready a full program to show where you are headed to bring your abatement levels down to where you want them to be.

Mr. Pickard: Our objective is to meet the requirements in that final report, being able to state what we are going to do, what is required. We have a lot of research to do yet to know exactly where we are going.

As Dr. Seeley pointed out, one way of meeting the 100,000-tonne level of SO₂ emissions is to increase our degree of roast to 64 per cent. That requires a technological breakthrough. We do not know that we are going to have that breakthrough by 1988. We have not counted on only one method of meeting the 100,000-tonne requirement.

As well as looking at the smelting process we have been looking at what we can do with improved pyrrhotite rejection in the mills. One of the problems we have is that our Strathcona mill, which eventually is going to be the only operating mill we have in the Sudbury area, was really designed to recover pyrrhotite for the nickel-iron refinery, which was a failure. We are very much involved in trying to revise that plant, to make it a pyrrhotite-rejection operation. We are spending considerable research dollars in this area as well as in the area of increasing the degree of roast.

What I see us ending up at--and this is going to depend on how the research develops--is a combination of an increased degree of roast, something more than the 60 per cent that we are at now but less than the 65 per cent, the ideal situation, something around 62 or 63 per cent, plus an improvement in pyrrhotite rejection as being the probable way we will go.

Other alternatives have been looked at and discarded of course. About 20 per cent of our SO₂ emission comes from the converting process. The converting process is an intermittent process, a batch process. The gases you derive from that process are not steady.

To run an acid plant you need a steady stream of gas of fairly uniform concentration. This you get from the roasters. That is why we recover acid from the roasters. We do not get such a gas from the converters. We have looked at the cost of installing facilities to recapture the sulphur dioxide from this plant. We continue to look at these costs. It is very expensive. This is why that type of technology is not one we are advocating.

Three years ago, we had an estimate done by a reputable American manufacturer which was providing scrubbers that worked to power plants in the United States. They were talking something in the order of US\$60,000 at that time for such a plant and were going to increase the upgrading cost by about US\$0.24 a pound.

Mr. Reed: It was US\$60 million, not US\$60,000.

Mr. Pickard: Oh, US\$60 million. Sorry. We backed away from that. But we have a series. We do not think we are going to end up with only one way of meeting that 100,000-tonne requirement; we are going to have several. By the end of 1988, we should know what the preferred routes are going to be. We will not be in a position at that time explicitly to say this is it.

We do not know what the capital costs are going to be. We have avoided quoting capital costs in the two reports because we have such a wide range of estimates. We could estimate anything from around \$15 million to over \$100 million on some of these processes. We have thrown out the top one so we are talking \$15 million-to probably \$70 million in capital. That is far more than we can afford at the present time. We are going to be counting on the fact that there is supposed to be joint federal and provincial money available for us to make whatever revisions are required.

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Mr. Chairman: As far as the research and development aspect of costs is concerned, have you received support moneys from the federal and/or provincial governments to some extent?

Mr. Pickard: We have grants from the Department of Regional Industrial Expansion for three projects. Converter slag cleaning is a key to anything we do in the smelter, as Dr. Seeley has pointed out. It has been a very successful project and has been quite successfully almost completed. The increased degree of roast is the second alternative. We are very actively involved in looking at it and we have a DRIE grant for it. The third one is pyrrhotite rejection. Again, we have a DRIE grant.

The three of these grants are for a maximum of \$15.2 million, of which they pay up to 40 per cent. So we have about a maximum of \$6.2 million that we could recover as DRIE grants. There is a lot of research that is going on that is not covered in these DRIE grants. We have received funding to date of \$1 million covering the expenditures that we have made until last July, primarily to do with slag cleaning. We have spent \$3.6 million in slag cleaning. We have \$1 million of that back.

Mr. Chairman: All of this funding has come from the federal government?

Mr. Pickard: Yes. There are no provincial funds that we are aware of that are available for this. We wish there were.

Mr. Poirier: I am not too familiar with what has happened to the price that you get from nickel on the world market. It would be interesting to see how you would relate what you could and would invest with the price and projected price of nickel on the world market. I presume what you can get--I know what you expect to get--would affect your capability of input into R and D and capital investments for SO₂ emission control, would that not?

Mr. Pickard: Very much so. We are very poor estimators of what the price is going to be. The price of nickel has continuously decreased since 1982. It used to be that there were only five producers of nickel in the noncommunist world, ourselves and Inco being the two largest. The third one being Sherriitt Gordon Mines Limited. The fourth one was the Société le Nickel in New Caledonia. In that scenario, I guess fifth is the Western Mining Corp. Ltd. in Australia.

There are now 30 producers of nickel. Whereas Canada used to produce 80 per cent of the free world's nickel production, between Inco and ourselves, we now produce something around 35 per cent. We no longer control the price. It is a commodity and we take whatever we can get for it.

Recently the price has come down to the \$1.50 range on the London Metal

Exchange. In price and dollar terms, that is the lowest price since 1946. At that time the price was still virtually frozen. The Second World War was over and domestic consumption had not really picked up. We do not know what nickel is going to do in the future. We certainly hope it is going to increase in price. We do not know what will happen. We have enormous expenditures required in the Sudbury ore bodies in order to develop our mines. We are putting approximately the equivalent of US\$1 a pound into capital expenditures in Sudbury, most of it having to do with the development of new mines.

In addition to that, we previously spent a lot of money on environmental concerns. We will continue to spend what we feel we can afford, but we do not know what it is really going to cost. Right now if we spent what we could afford, we would not spend anything. We know we have a moral obligation and a legal obligation to spend money on research and we continue to spend this. The greatest hunk of our research dollar is going into this environmental type of work.

Mr. Poirier: I was trying to follow closely some of the graphs that you were showing. You had the level of 88 tons per day of emission? What is that figure 88 again?

Mr. Pickard: It is 88 million pounds per year of nickel.

Mr. Poirier: Okay, fair enough. The production level--that is right.

Mr. Pickard: Yes.

Mr. Poirier: What is it today?

Mr. Pickard: We have a two-month shutdown scheduled for this year and our production from Sudbury is 62 million pounds.

Mr. Poirier: Obviously that is less than full operating capacity?

Mr. Pickard: Yes.

Mr. Poirier: What would be your full operating capacity if you had just incredible super nickel prices, or whatever, and you wanted to operate full tilt? What would it be?

Mr. Pickard: We would be driving to get back up to that 88-million-pound rate.

Mr. Poirier: That is your maximum?

Mr. Pickard: Yes. We could not turn that on overnight.

Mr. Poirier: No, of course not.

Mr. Pickard: We would have a lot of money to spend on developing ore, in order to get back up to that type of rate. But if the price really took off, we would be working towards getting up to a significantly higher rate. We would probably get up to 80 million pounds fairly readily if we had to. Is that correct, Mr. Reed?

Mr. Reed: I do not think you would quite reach that. It would be in the mid-70s, probably 75 million.

Mr. Poirier: Right. Can we have your comments on the current level

of government help that you are having right now, pertaining to your capability of meeting the expected levels?

Mr. Pickard: The current levels of the systems that we are receiving at present are strictly for research development demonstration. We are quite comfortable with the grants that we are receiving. We would have difficulty properly spending more money than we are spending right now, because of the fact that you have to have qualified research-oriented and operating-oriented people, in order to be able to spend this money properly.

Even if we were told to start doing a whole bunch more projects, we would have great difficulty in gearing up to do that quickly. We could do it over time. We have geared up to do what we are doing now over the last four or five years. Sure, we would like more money in grants, but we also do not believe in wasting money just because it is somebody else's money. We treat it as if it is our own, and we try to make sure we get a good return on it.

Mr. Poirier: How does that affect your competitive price, for example? You say you are talking about 37 nickel producers on the free western world market today and that has developed since 1982, which is--

Mr. Pickard: No. The 30 producers have developed since the early 1970s, when other producers really started to come into the market.

Mr. Poirier: Okay. It is still not a very old phenomenon, as opposed to the turn of the century, for example?

Mr. Pickard: No. It is not a very old phenomenon. The problem we face, of course, is that many of these producers are Third World countries that are not concerned with environment or with fixation of sulphur dioxide. Their labour costs are significantly lower than our labour costs in this country. They have very little government regulation to contend with, so they can operate, from that point of view, at much lower costs than we can operate.

We have to be better than they are. We have to have better technology. We have to have people who are more productive, and this is why we stay in business. This is part of our culture. Our Canadian culture is being able to stay in business in these areas, and I think we have done very well.

Mr. Poirier: How do you feel your company is coping with that very aspect?

Mr. Pickard: We are coping extremely well. Unfortunately, we have seen our labour force in the Sudbury area reduced from a little better than 4,000 in 1980 to 2,250 today. But productivity increases have been quite good. This is the only way that anybody is staying in production today; by being more productive, having greater efficiencies and being smarter by getting more metal out of a ton of ore than anybody else.

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Mr. Partington: Yes, I have a couple of questions. At the beginning of the Countdown Acid Rain program, the limit set for Falconbridge was 154 kilotonnes per year of emissions. Did you already have the capacity in place to reach that target at that time?

Mr. Pickard: At that point, that was our control order and we were within the requirements of that control order.

Mr. Partington: When it was established, you were already within those requirements?

Mr. Pickard: Yes, were within 154,000 metric tonnes. We spent \$83 million on a new smelting process in order to get down to that 154,000 metric tonne level.

Mr. Partington: When did you start that process?

Mr. Pickard: The research and development for that project started about 1968.

Mr. Partington: When did it finish?

Mr. Pickard: The new smelter was on line in 1979.

Mr. Partington: I see. Are you confident you now have the technology to reach the 1994 levels you are going to be limited to, or have you indicated you will not know that until 1988?

Mr. Pickard: We do not have the technology now to reach those levels. If we had the technology now, we would not have to spend all the money we are in attempting to develop it. We do not have that technology now.

Mr. Partington: By 1988, will you know whether you can meet those levels in 1994, or is it something that is just an ongoing process and you find out as you get closer to 1994?

Mr. Pickard: As we get closer to it, we will find out whether we will be able to meet it. We anticipate that by the end of 1988 we will have eliminated a number of the options we are currently looking at, that we will find out the ones that are just not going to work. We will be left with a reduced number and will put more effort into those.

It is our commitment to meet that 1994 level and we just have to keep going on it. We are spending about \$2.5 million a year of our money, out of a \$5 million research budget, on this acid rain problem, the SO₂ emission problem. Certainly it is something we are not underplaying. It is a significant part of our R and D dollars. There is no return financially on these dollars. We are spending this money. If we were not doing this, probably we would be spending that same amount of money trying to find better processes.

Mr. Partington: What do you do to the government in 1994 if you cannot meet those limits?

Mr. Pickard: What will we do to the government?

Mr. Partington: What will you say? Have you considered that option, what you might do if have not reached those limits by 1994?

Mr. Pickard: We are confident we are going to reach the limits, but if worst comes to worst and we get into the situation which says we do not operate unless we meet the limits, we will have to reduce our production level to the level at which we meet the limits.

Our objective is to be able to meet those limits at an 88 million pound level and, it is no secret, we are way below those limits right now. We are only putting out 80,000 metric tonnes a year, but last year we only produced 65 million pounds of nickel.

Mr. Partington: I see.

Mr. Wiseman: Part of my question has been answered, but I wondered if Falconbridge is in other provinces such as Quebec, and, if it is, are their provincial governments helping you with the research and development? You said you are using all you can use at present, any more might be a waste and you treat it like your own money.

Yesterday, we heard the federal government was putting in money for research and development, but I was a little taken aback that our provincial government had not come forward with some research and development funds when they are pushing you so hard to meet these limits in 1994.

Mr. Pickard: We have no smelting operations outside of Ontario. In Ontario, we have two installations. One is at Sudbury which is the one we are discussing.

The other one is our Timmins operation, Kidd Creek, which we acquired a year ago. Kidd Creek is actually about the most environmentally acceptable operation in North America. We talk about hundreds of thousands of tonnes per year. Kidd Creek's allowable emissions are 4,700 metric tonnes per year. They have a copper smelter and a zinc plant. In the copper smelter, they are fixing 99.6 per cent of the sulphur which is in the concentrate fed to that smelter, and in the zinc plant it is 98 per cent. They have a brand new plant that was designed to do this and it has been used as an example by many authorities, including the various provincial governments.

That is the other spot we operate. As far as emissions are concerned, we do not have any problems. We seem to have other problems up there, but we do not have that type of problem. We are just operating in Ontario, and there is no mechanism we are aware of for provincial government funding.

When the acid rain program went in, there was discussion that both the provinces and the federal government would kick in money, but I believe the situation now is that only the federal government is contributing to the research. When we get around to looking at the capital that is required to make these revisions, we are certainly hoping that both the federal and the provincial governments are going to support that funding.

Dr. Seeley: Could I make another point on that? One of the things in commercializing or implementing this technology is that doing all the research and development and then commercializing it all at once is a very difficult thing to do. When we are looking at these different scenarios and different parts of technology to put the whole picture together, we often find that we would like to be implementing a part of the technology as we go.

For instance, to be able to get to a new frontier with a thing such as process control in a mill, the technology of the process control part of it needs to be improved. We can figure out ways of doing that within a year and a half or that type of thing, but at present there is no going ahead with that because it is a capital type of project. Again, this is an area that needs to be considered. Right now, we have several projects like that which could be commercialized more quickly. The total package will get you there, but these individual elements will not get you there independently.

Mr. Partington: For clarification, did you say, sir, that this year your emissions are 88,000 kilotonnes?

Mr. Pickard: In 1986, our sulphur dioxide emissions were 80,000 metric tonnes.

Mr. Partington: Okay. Then the question I have is--and perhaps I should have been here for the first hour, but I was at another environmental meeting--why would the limit be set at 154,000 if you are already at 88,000, which is substantially less than the 154,000?

Mr. Pickard: Perhaps I should just go back and show you a slide. This shows the amount of sulphur that we have emitted up the stack as a percentage of the feed to the smelter. You can see how that has been coming down steadily. That is not the one I want.

Mr. Chairman: Could you speak into one of the mikes?

Mr. Pickard: Okay. This slide shows the actual levels of emissions from the Falconbridge smelter in metric tonnes per day from 1960 through to 1985. You can see that when the first control order was imposed in 1970, we were emitting almost 1,000 metric tonnes per day. The control order eventually brought us down to a level of 420 metric tonnes per day in 1980. The 420 metric tonnes per day is the 154,000 metric tonnes per year level. We started reducing the quantities of emissions so that we were always within the requirement of the control order.

Back in 1978-79, or even earlier--back in the mid-1970s--we were producing up to 96 million pounds of nickel a year from the Sudbury operation. Those were the levels we were emitting at that time.

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We had a level of 154,000 in this control order that was imposed on us. We continued to work to reduce the quantity of SO_2 that we were emitting to below the level that was allowable. This is one of the things that I stress. Falconbridge has consistently complied with any requirements of the ministry, and we have always attempted to do better than we have been asked to do. I think this chart shows this very well. We have not been willing to sit back and just go at the levels; we have always tried to do better. This is what we are trying to do right now.

Dr. Seeley: Another point on that is that we are in a business that is competitive, and that is nickel. We have to be considered with respect to others as well. We have done our part of it, so asking us to do more is difficult economically.

The other thing is that at present we are way below because of capacity. We are down at the 65-million pound range, and that is not economic. For us to stay in business we must have that capacity.

Mr. Eves: I have a few questions, some of which have already been touched on. Are we to take it that the amount of funding or money you say you are spending every year to improve your environmental programs is all your own money, or is part of it, for example, funding from the federal government's Department of Regional Industrial Expansion program?

Mr. Pickard: No, part of this will be federal government DRIE funding. At the beginning of 1987 we received \$1 million in DRIE funds. Table 6.1 on page 24 of the submission that you have shows the funds that we have already spent and the DRIE grants that we anticipate receiving. You will see

that up to the end of 1986 we had spent \$7.3 million. We were looking at getting about \$1.8 million back from DRIE last year. We actually got slightly better than \$1 million, so we had an expenditure of about \$6.1 million to the end of 1986.

In the next two years, we are looking at total expenditures around \$3 million. Those expenditures are fairly firm. We are going to make those and we are looking at about \$1 million a year coming back to us in DRIE grants. Some of that money is coming back to us for expenditures that we made two years ago. Government bureaucracy is notoriously slow, especially when it comes to getting grants. The amount of documentation that you have to submit for this takes months to prepare and months for somebody else to go through. You are generally working at least a year behind schedule. We are looking at receiving funds this year and next year for work that we did in prior years, but we are looking at about this \$3-million level.

With the figures we have for 1989 and 1990, we are making assumptions that, at that point, we will know which way we are going. You will see that we are including about \$3 million a year for demonstration. This is for actually doing plant-scale tests or doing commercial-sized pilot plant tests to prove out the technology.

Mr. Eves: I see the time lines for some of your programs are anywhere from three years to seven years.

Mr. Pickard: Yes.

Mr. Eves: You indicated that even if you had more money today, you probably could not spend it properly or wisely because of the available technology. Your colleague indicated a few moments ago that, indeed, if you had more capital money available to you from either or both levels of government or from some other source, you could probably speed up somewhat your expenditures and improve your record. Is it limited by technology or is it limited by funding? I guess my very direct question to you is that if you had substantially more funding to assist you in capital expenditures, could you help clean up the environment a lot quicker?

Mr. Pickard: I think that once we have discovered what the preferred route is going to be, we will be in a much better position to answer that. I indicated that today we do not have the resources available to spend at a great enough rate. One of our concerns right now is just being able to hire qualified people. We are attempting to hire qualified people; we are having difficulty in finding some of the people with the specific skills we need. That is what is limiting some of the expenditures.

If you were to say that X millions of dollars were going to become available to speed this up, if we could speed it up, we could start gearing up to do that, but it is not something we can do overnight. It is something that is going to take time. We really have not looked at how quickly we can do this. We have laid out a program we think is reasonable and within the time frame required by 1994. If somebody turns around and says that time frame is by 1990, there is going to be a lot of money wasted in meeting it by crashing a lot of the programs we are now doing in a logical sequence.

The answer to it is that if the time were moved up, we definitely would have to spend more money and the amount of money we would spend would probably be significantly more than the total we estimate here, because we would waste a lot.

Mr. Eves: There are no capital projects right now, with today's technology, that you know of and can invest in?

Mr. Pickard: Yes. From that point of view, we are currently developing a capital project with respect to the milling, the rejection of pyrrhotite, that conceivably could and should qualify for some of this funding. We are far enough along on part of it that we can see the need for capital. We cannot quote you a figure right now, but we are getting to a point where we expect our first application for some of this money, for the capital, whomever is putting it up, will be forthcoming in a year.

Mr. Eves: Do you expect to receive provincial money for that as well?

Mr. Pickard: As we understand the original federal-provincial agreement--and there is disagreement between the province and the federal people about this--half is going to come from the federal government and half is going to come from the provincial government.

Mr. Eves: You have no idea what a ball-park figure will be?

Mr. Pickard: The gross estimate we have come up with, as I mentioned previously, is anything from \$15 million to \$70 million, and we can go a hell of a lot higher than that if we have to. That is the type of figure we are talking about. It is significant.

Mr. Eves: I believe the provincial and federal governments have each pledged \$85 million over five years. In your opinion, is that going to begin to address the very real capital expenditures, not only to yourselves, but also to all the other emitters in Ontario? Is that going to be sufficient?

Mr. Pickard: No.

Mr. Eves: With respect to your annual cap and regulation 661/85, which was issued in December 1985, are you subject to a daily cap any longer, or is it an annual cap?

Mr. Pickard: Our control order is a daily cap. Our control order specifies--we are going back a few years--465 short tons per calendar day. Multiplying 465 by 365 days in the year and converting, we end up with 154,000 metric tonnes per year. Our control order is for an average daily emission. When the control orders were issued, back in the mid-1970s, everybody was thinking in imperial weights and everybody was concerned about the daily emission levels.

Mr. Eves: Does the new regulation still speak of a daily cap?

Mr. Pickard: No. It speaks of an annual cap but an operating day. We can exceed the daily level but we cannot exceed it on average. It is a grey area in that new regulation. We keep thinking of it as a daily cap ourselves. We have always thought of it as a daily cap and have attempted not to exceed that. That is a simple way to make sure you do not get into trouble.

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Mr. Eves: So you have adopted as a policy that you are not going to exceed a daily average, but I am correct in saying the new regulation does not necessarily require you to do that.

Mr. Pickard: I would have to read that regulation again. I must admit I have not read it for a number of months. Larry, do you recall what it said?

Dr. Seeley: That was discussed several times. I think the Ministry of the Environment was concerned that we would one day emit 800 tonnes of material and the next day zero, and the process is not capable of doing that. We have this 154,000 tonnes, and it is a calendar day, so on average we are running at 422 tonnes per day or less.

It is a yearly cap with a calendar-day average, and I understand the 100,000 tonnes is the same thing, the yearly calendar-day basis. That brings you down to about 273 metric tonnes per day. We operate and have operated with the policy of not going above that.

Mr. Eves: Would you agree that if you were to exceed the daily cap, short periods of high concentration could have significant impact on the environment? For example, say you doubled your daily cap for 100 days in a row and then did not operate for 200 days, you would easily fall within your yearly average. Would you care to comment or do you have any knowledge as to what impact that might have on the environment?

Mr. Pickard: I do not think it is physically possible for us to do that for that period of time. The impact it would have on the environment would be local impact, to a large extent. One of the other regulations we operate under is that of ground-level concentration. There is a system of fixed monitors in the Sudbury area, sensing the quantity of sulphur dioxide in the air that is analysed at those monitors. We are limited on the quantity of sulphur dioxide we can have impinging on any monitor at any one time to 0.5 parts per million over one hour.

All these monitoring stations are connected by telephone line to the central control room in the smelter, so the central control room operator knows the reading at each monitor, the wind direction and whether it is the plume from our stack or the Inco stack that is impinging on that monitor. It does happen, but rarely do all the stacks impinge on the same monitor. You have to have winds blowing together, but it does happen.

When this occurs, we have to take action to shut down part of the smelting process to prevent the high ground-level concentration. If we were to continue to emit double the level, we could not do it physically.

Mr. Eves: That is only an example. Pick a number you can do, 23 per cent or 37.5 per cent.

Mr. Pickard: I do not know. What could we get up to? If we took 1,800 tonnes of 31 per cent sulphur material a day and fixed only 50 per cent of it, the best we could do would be 558 short tons or 502 metric tonnes. That is probably the best we could get up the stack. That is not much above the 420 we are allowed; it is 20 per cent. That would probably not have any effect on the immediate environment. I do not know what its effect is on long-range transportation.

Mrs. Marland: When you were talking about not wanting to be specific about the capital costs, I assume it is because they would vary as to the timing, because obviously it is something you could have done last year or the beginning of this year and possibly would be less than when you actually do it, whether it is six months or a year from now. Is that the reason?

Mr. Pickard: That is part of the reason. The other part is that we do not know what we want to do until we have finished doing the research. When we talk about this wide spread, we are saying, "If this is all we have to do, this is all it would cost." Ideally, we hope that we can do it for \$15 million, that the research people find the breakthroughs and it does not cost us a great deal of money. If that does not work and we have to do plans A through Z instead of plans A through D and we get up to a \$70-million level--this is what we do not know.

Until the research progresses to another level from what it is now, we cannot tell what the capital cost is going to be. It is not that we do not want to say what it is; we just do not know. We would love to be in a position right now to be able to say: "Yes, we need \$50 million. Will the government give us \$40 million of it?"

Mrs. Marland: By my question, I was not suggesting you did not want to tell us. I wanted to understand and sympathize with why you could not.

I also want to reconfirm the request of the chairman for the hard copy of your slides. Interestingly enough, in regard to that slide you just put back on that showed your compliance with the control order, I had gone through them during the second presentation to see if I could find it. I think that is the most revealing slide of your whole presentation this morning.

Mr. Pickard: Is it not in the coloured brochure?

Mrs. Marland: No, I have gone through both of them.

Interjection: It is in the other brochure.

Mr. Pickard: That one, yes.

Mrs. Marland: Okay. I had gone through the two.

Mr. Packard: The only difference is that the brochure only takes it up to 1982; this one takes it to 1985. There is no change, but I can certainly give you a revised copy of that slide.

Mrs. Marland: It is a very illustrative slide in view of the fact that, unless the control order is revised, you are more than complying with it. All the way through to 1998, I think, is the end of the scale that is shown on that graph. Anyone looking at that would have to draw one of two conclusions: Either the control order is not strict enough, or you should be commended for your corporate responsibility as corporate citizens in not only meeting the control order but also being well below it.

Mr. Pickard: We are well below it at present because we are only producing at 65 to 70 million pounds per year. If we produced at 88 million pounds per year, we would not be able to keep within that 100,000-tonne level.

Mrs. Marland: The reduction in your production is because of the market, I understand.

Mr. Pickard: Yes.

Mrs. Marland: That leads to the next question I have. One of the concerns the public is always given by companies that are trying to comply with emission abatement procedures is, "Ladies and gentlemen, either we

continue in business or we comply with great difficulty and there is a reduction in jobs," and so forth, for the people in that employment.

During the years you have been complying, and certainly from that graph, you have been doing a commendable job in terms of your responsibility to the control order. It has not just happened in the past 18 months or two years. I recognize that the volumes have not been entirely your choice either, from a business point of view, because of the market, but could you tell us whether complying to where you are today has affected the employment of your employees? You mentioned that you have gone from 4,000 employees down to 2,300. Was that because of the difference in the technology or was that because of the reduction in the production and the compliance?

Mr. Pickard: There was a significant reduction in the number of employees required to operate the smelter when we initiated the new smelter. This was back in 1979. In the mid-1970s, we had up to 700 employees in that smelter. At present, we have 275, including maintenance.

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Mrs. Marland: So that is a major reduction.

Mr. Pickard: Yes. In the Ontario-Canada task force on Inco and Falconbridge, you will find some data in here that are quite interesting with respect to how the task force saw the impact of these revisions in smelting on labour. If I can look through the index, I will find it very quickly.

We are not quite sure how they arrived at some of these data, but any revisions that are made do result in work-force reductions. This is after we started our smelter. I am not saying these figures are right because I do not know how they were arrived at, and we have not done any calculations. They are estimating that if we go ahead and make the reductions that were advocated in this report, which is 50 per cent overall reduction and what regulation 661/85 required, we would have a loss of employment at Falconbridge of between 17 and 190 people in our smelter.

Mrs. Marland: That is from the 700.

Mr. Pickard: No, that is from the 275 level. There would be an additional loss that they can foresee. I do not know exactly how these figures were arrived at. They are saying the long-term effects at Inco are between 1,000 and 1,400. There can be significant reductions according to what these people are saying.

Mrs. Marland: There is another question I have. Mr. Wiseman asked you about your operations elsewhere in Canada. Do you share research and development information with smelting operations elsewhere in the world? I know the environmental restrictions in other parts of the world are not as strict as ours. I use the word "strict," but what I really mean is progressive. I see emission abatement measures as being progressive in the interests of everybody.

Are other smelting operations elsewhere sharing information with you, or are you able to purchase information that their research people have done?

Mr. Pickard: Generally speaking, we are the leaders in the technology we are practising of fluid bed roasting electric furnaces. While we started out gathering information from others in the late 1960s and 1970s to

build this smelter, we now have a continuous stream of people coming to us to see how this type of thing is done. We are in the position of being leaders in that field.

We do keep abreast of what others are doing in technology. If somebody had something we felt was going to be of value to us, we would attempt to acquire that technology. Whether it was something they would let us have or whether it was something we would have to purchase, we would attempt to acquire it. We have no formal sharing arrangements with any person with respect to our technology.

Mrs. Marland: I am sensitive to the time. It is part of the problem of being last to ask questions. I have one question.

Mr. Chairman: There are four or five other speakers, but if you want, go ahead.

Mrs. Marland: Yes. Next time, I will ask my questions first rather than last when we are running out of time.

I do have a concern, just to get back to the question about the daily cap. Now that you are into a yearly cap with this regulation, obviously what we are into with Falconbridge is an honour system. With your operation at the moment, we are fortunate that, voluntarily, you are not exceeding what had previously been the daily cap, from your comments a few minutes ago.

I have to say, however, and maybe it is more a comment to the ministry, that it seems absurd to me that we have control orders with caps that are not daily. Even if you went to the maximum you said you could go, which I think you said was from 420 to 502, that is 20 per cent, which is quite a lot. It certainly would be a lot if it were prolonged over a period of weeks, let alone months.

I wonder if you want to comment on that regulation. Does a daily cap impede the operation? Why would they have gone to an annual cap? Do you think there would be complaints about the annual cap?

Mr. Pickard: I am not sure whether there is an annual cap or a daily cap. I cannot recall the wording of that regulation. I know we keep talking of everything in annual terms now.

Mrs. Marland: I see.

Mr. Pickard: As I indicated before, I cannot remember. Previously we were specified, and everything was talked about on a daily basis. Then it got around to annual tonnage. If you are running at capacity, to be firmly restricted daily to 420 tonnes, with no excursion allowed over 420 tonnes, would make it very difficult to operate. There are going to be days when you want to catch up on the production you lost the day before, so you would be somewhat above whatever the maximum was, that is, if we were running on the line. We are not, fortunately, so we really do not get into that concern.

Mr. G. I. Miller: Is that fortunately or unfortunately? Would it not be better to be running at full steam?

Mr. Pickard: It would be better. It is fortunately from the point of view of the environment, but unfortunately.

Mr. G. I. Miller: That is right.

Mr. Pickard: We always like to be running up there at the top. Anyway, that is the situation with caps. I cannot answer. We would have to look up the regulation to see what it does say.

Mr. Wiseman: If you do not buy research and development from other people, do you foresee that when you get this together you might be able to sell it to other countries or other companies and recoup some of the research and development money you have in there? Or is this free among big companies? Do they give this out for nothing?

Mr. Pickard: You always attempt to get something for it, but in our experience, it is very rare that you ever get anything financial for it. You usually get access to somebody else's technology.

Mr. Wiseman: It is given freely in most cases.

Mr. Pickard: Some of it you protect by patents, but for the most part, it gets resolved freely. There is an enormous exchange of technology among mining companies. You really do not know what technology you have given away and what you have not. When you have something that is unique and that you can patent, then you attempt to get money for it. We have a few processes we have developed that we do license people to use.

Dr. Seeley: I would like to add to that. We are attempting to use all the resources that are available in the world. We are linked in with several consulting firms that are at the frontiers in this area, not only on the milling side, but also on the smelting side. These are very reputable firms.

We are working with the University of Toronto metallurgy department. We are tied in with others at Queen's University and so on. We have projects going on. Our people are working at the frontiers in several different areas. We have Lakefield Research north of Peterborough, which we own ourselves, which is in mineral processing. This laboratory is the laboratory in the world, you might say, that everybody goes to.

I would say that we do not have this idea of doing everything internally. We are attempting to use all the resources that are available everywhere.

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Mr. G. I. Miller: I have a supplementary on that. You are working closely with the university at Sudbury, and it seems to me that we have some tools there to work with. It comes across very clearly that there are not people available here in Ontario with the knowledge to deal with some of the problems. Can we play a role and should the ministries be playing a role in providing a better service to the university, particularly at Sudbury, to assist in developing this technology?

Dr. Seeley: We are not working that much with Laurentian University in Sudbury. We had been working a great deal with the University of Toronto, Queen's University, McGill University, Ecole Polytechnique. We have done a little bit of work with Laurentian, but we are going where the people are. In a lot of universities you do not find the people needed for this kind of technology.

Mr. Chairman: Is it not true that Queen's and U of T are the schools

that have been designated as having those particular expertises or faculties for mining?

Mr. Pickard: That is correct. They are very much in the forefront in this area, as are some of the other provincial ones like McGill and Ecole Polytechnique.

Mrs. Grier: First, let me apologize for having missed a presentation this morning. If you have answered any of my questions, just say so, and I will get the answers from the record.

Following up on the conversation about the emissions, as I read the regulation, and you can correct me if I am wrong, it says that you shall not emit sulphur dioxide on any day after your emissions in that calendar year exceed 100 kilotonnes.

Mr. Pickard: That is correct. That is the new order.

Mrs. Grier: So, while there may not be a daily cap, if by mid-June you have exceeded 100 kilotonnes, you are not operating?

Mr. Pickard: We would be shut down for the balance of the year, if that occurred.

Mrs. Grier: In looking through your written submissions, I could not find any reference to the 1982 federal-provincial task force. I have looked at you and at Inco, and I wonder what action had been taken on the conclusions of that task force, since it reported in the fall of 1982, and how all that fitted into the work you have been doing to comply with the Countdown Acid Rain program.

Mr. Pickard: A number of the conclusions of that task force are areas in which we are currently working. One of the areas the task force looked at was improved pyrrhotite rejection. This is one of the significant areas we are working on. Another one was increasing the degree of roast. Again, this is something we are working at. We looked at other areas that were suggested in that task force approach, such as the fixation of sulphur dioxide that is emitted from the converters, as I mentioned previously, but it is far too expensive.

We have not disregarded the report, and I have one here. It is out on my desk where I can get at it all the time, because that was a good report. There was an enormous amount of work put into it by the people. The report was extremely good, and we still go back and use it for reference ourselves. They had appendices for that thing that must have been two feet thick.

As I say, it was a good report, and we still go back and look at its suggestions. It was a very co-operative report in that the companies inputted to it, as did the various government and other experts. That report has not been lost in the shuffle. We have not referred to it specifically in our two reports, and we probably should have. That is a very good point, because we have used data out of that to guide us in what we are trying to do.

Mrs. Grier: I am trying to come to grips with what happened between that report in 1982 and Countdown Acid Rain in 1985, and if there had not been Countdown Acid Rain whether we would have seen implementation of any of the procedures recommended or looked at in that 1982 report. How much of what you have done since has duplicated what was done in preparation for that report?

Mr. Pickard: We had considerable work going on prior to the announcement of Countdown Acid Rain in 1985. We have spent quite a bit of money following along on some of the areas. We had said we have to improve our pyrrhotite rejection. I am not saying we are doing it strictly for the SO₂ emission problems, because if we can improve pyrrhotite rejection, it is also going to make our processes much more economically viable. But we have been looking at improving pyrrhotite rejection. We have been increasing the degree of growth and working on the slag-cleaning situation. Before Countdown Acid Rain came along, before December 1985 when the new limit was imposed on us, we were doing a lot of work, some of which was the result of items mentioned in that report. Some of the items mentioned in that report are in there because the companies felt they were good approaches. Other items were the result of the committee. As I say, it was a very good report.

Mrs. Grier: From Dr. Seeley's earlier remarks about the research and development you were doing and the date at the end of 1988 when presumably the actual implementation of funding and things can click in, I got a sense that there were things you could do prior to that date if the money was available or if the go-ahead was given to you by the Ministry of the Environment. I would be interested to know if that is a correct impression. If so, what do you think the ministry could be doing to help you put things in place now and to see whether in fact they work? Are we stuck with waiting until the end of 1988 to see whether the research you are doing is effective when it is in operation?

Dr. Seeley: Maybe I could answer that with an example. If we look at the mill process, one of the things that the mill is doing is separating pentlandite from pyrrhotite and rejecting pyrrhotite. We are doing that already. In the mill we have something over 300 flotation cells. We have a process-control system that is an early 1970 type. There are many steps ahead to be taken to get to this overall improved efficiency process. You have to go to a modernization program as well as new unit operations and new ways of putting the separation package together.

For instance, process control and new technologies in that area, which are now becoming available, could be implemented. That may increment a small amount of pyrrhotite rejection and make things more economic as well as reduce the pyrrhotite going to a smelter. Another change could be changing to large flotation cells, which is going on throughout the world. Again this is a modernization. It is going from the 300 cells to something in the order of 30 cells, which are much easier to control, and then you can get your process to be more efficient. Those types of things could start to be implemented.

Mrs. Grier: Why are they not being implemented now?

Dr. Seeley: Because in many cases it is uneconomic to do it. Also we still have not identified exactly what to do, for example what systems we should be installing, and what size cells. There is more work to be done technically to figure out what to do.

Mrs. Grier: Is the 1988 date an artificial date, and are some things marking time waiting for that date to come around?

Dr. Seeley: In some cases, yes.

Mr. Morin-Strom: One issue I would like to bring up and that is the issue of the combining of the sulphur with the deposits of phosphorous for possible potential for a fertilizer plant, which has been talked about in the

Sudbury area for many years. The deposit that I know and hear about is the one in Cargill township. You addressed the issue briefly today by saying that the deposits are not considered economically viable. However, in terms of economic development for northern Ontario, clearly there would be benefits to us focusing on trying to create something which can generate revenue and would provide employment, not only in terms of a plant in the Sudbury area, but in the development of a phosphorous deposit in northern Ontario.

What studies in fact have been done on that deposit and its potential use in combination with sulphur from your operations, let us say, and why are you really rejecting that out of hand?

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Mr. Pickard: I do not know that we are rejecting it out of hand. Studies have been carried out. I believe the provincial government carried out one of these studies. Studies have been carried out by the people who own the deposit and those who have leased the deposit. I am not sure just who owns it right now. At one time, Sherritt Gordon was involved in it. At one time, one of the western Canada fertilizer producers was involved in it.

A number of people have looked at this. Without going back and doing some reading to refresh my memory as to exactly what was developed on that economically, I am not in a position to quote any figures, other than that it has never proven to be an economically viable, stand-alone type of project. Certainly I cannot tell what level of subsidization is required to make it viable, but I think you can probably find it in provincial government reports.

Mr. Morin-Strom: Since you have had a mandate to look at ways of reducing sulphuric emissions from your own operation, I am a bit surprised you have not done any of your research spending or even tried to gather these reports yourselves, to be able to do an assessment as to whether that might be a lower-cost route than the alternatives you are looking at, which are focused strictly on cost components within your own operation. I suppose there are some operating benefits but no overall benefits in terms of creating a new product or creating employment elsewhere in northern Ontario. Why have you not studied it yourselves?

Mr. Pickard: The starting point for a process to produce a superphosphate type of fertilizer is sulphuric acid. You have to remove the sulphur from the ore and convert it to sulphuric acid. What we are looking at in our processes to do with the smelter is to increase the fixation of sulphur dioxide, the capture of sulphur dioxide, and increase the production of sulphuric acid. That is our end product. You can then take and use that end product in conjunction with the phosphate rock to make superphosphate, but you have to go through the sulphuric acid stage first.

At present, we sell our sulphuric acid. Our sulphuric acid is marketed by CIL. We are able to sell all we can produce. We do not get as much money as we would like to get, but we are able to sell it all. We make a slight operating profit on the sulphuric acid but do not amortize the plant.

What happens with something like the Cargill deposit is it will only make the economics of capturing sulphur as sulphuric acid more negative. The process starts where we end in our production. This is why we have not gone into it. There is no economic incentive for us to make a superphosphate when so many people have looked at it and said it is not economically viable. We have looked at those reports. I look at thousands of reports a year. I just

cannot remember those offhand, because they are not the pressing types of things you dig out and read every once in a while. We certainly could come up with, and I am sure the committee could acquire, the reports required.

Dr. Seeley: I do not know whether you are aware that there was a phosphate fertilizer plant in Ontario for 20 years. It was closed last year.

Mr. G. I. Miller: What was that?

Dr. Seeley: There was a fertilizer plant operating in Ontario, producing phosphoric acid from sulphuric acid, bringing phosphate rock in from Florida, which was less expensive than any mining and milling with the Cargill deposit, and that plant was closed. I do not want to mention the company. I think you can easily find out.

Mr. Morin-Strom: It is located here in southern Ontario?

Dr. Seeley: It was uneconomic.

Mr. G. I. Miller: Was that in Port Maitland?

Dr. Seeley: Yes.

Mr. Pickard: I forgot that one.

Mr. G. I. Miller: Because they were processing it in Florida, I believe, and sending the processed material to Ontario using that as a warehouse.

Dr. Seeley: Was it being processed in Ontario, was phosphate rock being brought in from Florida?

Mr. G. I. Miller: It was being processed in Florida and now warehoused out of Port Maitland.

Dr. Seeley: Fertilizer is now being produced in Florida, but previously it was processed in Port Maitland.

Mr. G. I. Miller: Processed in Port Maitland.

Mr. Chairman: Mr. Morin-Strom, you started the morning with low-level bombers and ended up with fertilizers. No comparison.

Thank you, Mr. Pickard, Mr. Reed, Dr. Seeley, for taking the time to appear before us today.

Mr. Pickard: I will provide Ms. Manikel with hard copy so there is no confusion about the slides. They will all be in one folder, instead of spread out among three reports.

The committee recessed at 12:25 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, FEBRUARY 25, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitutions:

Morin-Strom, K. (Sault Ste. Marie NDP) for Mr. Charlton

Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From Inco Ltd.:

Aitken, W. R. O., Executive Vice-President

Ferguson, W. C., Director, Environmental Affairs

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office

SELECT COMMITTEE ON THE ENVIRONMENT

The committee met at 2:11 p.m. in committee room 151.

Mr. Chairman: We will begin our afternoon proceedings. There was a request for us to have a short discussion on the resolution introduced by Mr. Morin-Strom this morning. I understand that discussion will take place a little later in the afternoon.

INCO LTD.

We would like to start by doing a fairly brief slide presentation and attempt in the course of that to show you the essence of our SO₂ problem, where we have come from, what we are in the process of doing now, and hopefully where that leads us to. Then I am sure you will have lots of questions.

Mrs. Marland: Mr. Chairman, is it possible to have the lights dimmed to the point where the screen works for the cameras, but there is enough light for us to take notes?

Mrs. Marland: Then you will know whether I have good eyesight. I noticed when I came in with the overheads this morning, for example, there was

Mrs. Marland: Thank you.

Mrs. Marland: I can do with less than that.

Mr. Chairman: That is fine. That should be okay. We will just leave the lights at that level.

Mr. Aitken: What this slide indicates is the composition of the material that we mine in Sudbury. It is a sort of diagrammatic presentation. If you look at this pie chart, as we call it, three quarters of it is rock; essentially barren material. The first thing we have to do is crush, mill, grind, float this material off and get rid of it. That goes to tailings. There is nothing of significance contained in that rock material.

Of the remaining quarter, three quarters of that is this material called pyrrhotite. That is essentially an iron sulphide which contains about one per cent nickel. As well as containing that amount of nickel, it contains a lot of sulphur. We have this small portion here of a mineral called chalcopyrite and that is a copper sulphide which again contains iron and pentlandite, a nickel sulphide which also contains iron. This is the real objective: the pentlandite.

What you are looking at is a composite material where each of the minerals, nickel, copper or iron, combines with sulphur and that is the basis of the problem. Our problem is compounded compared to many other operators in this type of business because we have a lot more sulphur than they have. In this pentlandite material, we have one pound of sulphur per pound of nickel, and there is another pound of sulphur comes with the copper mineral. We get a lot more of this iron mineral which we really do not want and we have six pounds of sulphur there. So for every pound of nickel that we mine, we get eight pounds of sulphur.

That compares to what you find in the typical copper smelter in the United States. Here we are looking at the sulphur-to-copper ratio in a series of smelters in Arizona, Montana, New Mexico, Nevada, Texas, and so on, and you find that where we have eight pounds per pound of nickel, they have something less than one pound up to about a pound and a half of sulphur per pound of copper. Our problem is seven or eight times greater than the typical copper smelter.

That is part of the story.

Mr. Morin-Strom: May I have a supplementary as the points are going on? You say it is seven or eight times greater relative to the pounds of material you are trying to get. However, this is copper you are using as your comparison. Obviously, nickel has a much higher value than copper. I am not sure that it is seven or eight times higher than the value of the end product you are going to get. A pound of nickel is obviously worth quite a bit more than a pound of copper. At least, I assume it is.

Mr. Aitken: That depends on the cost of extraction of the nickel. If the cost of extraction of the nickel is twice that of copper, you are no further ahead. I think, in fact, this is a fair comparison.

That is about where you sit. That is one of the reasons copper is sitting today at about US\$0.63 or US\$0.64 a pound and nickel is sitting at US\$1.73. Those prices reflect the cost structure of the industry. They do not reflect it as accurately as we would like it to be reflected today but that is another question.

I think there is a fairly legitimate relationship between the two industries. It is unfortunate that we cannot find a nickel industry in the United States in one respect and in another it is a good one. We do not need any more of that sort of competition.

Given that problem, the first thing we want to do is try to get rid of

as much of that pyrrhotite, the iron sulphide material, as we can, and going back to the 1940s, Inco has been working at developing and implementing methods to separate pyrrhotite from the rest of the mineralized material and reject it, send it out to the tailings. You have read in some of the material you were provided about pyrrhotite rejection. Since 1955, when we built an iron ore recovery plant, up until today, we have now reached the point where more than half of that pyrrhotite goes out to the tailings.

Mrs. Marland: Out to what?

Mr. Aitken: To the tailings area. That is really a mining term, if you like, for a garbage dump. There is nothing there of value.

Mrs. Marland: I know what it is. I just did not hear the word.

Mr. Aitken: This is an aerial view of a plant called the iron ore recovery plant which we built in 1955, and the objective of this plant was to recover everything of value in that material instead of sending it to the tailings area. It contained iron, so we said, "Let us try to extract the iron," and we did.

First, we roasted the material and coming from there we got sulphur dioxide which we captured in an acid plant. We will talk a little bit more about acid later. So we got useful value out of the sulphur. Then we leached that calcine and extracted the nickel content of the pyrrhotite and we made a useful product, a soluble nickel oxide. We took the residual magnetite, which is an iron oxide, and we pelletized it in this building. We made iron pellets. Out of this waste material, we had extracted everything that you could. The only problem with that was that we were making iron in just about the most difficult and expensive way you could imagine.

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We were going underground to mine a nickel ore and extracting from it an iron fraction and then pelletizing it to create a product which was still contaminated to some extent by nickel. That was a great idea, but once the Brazilians came in with their enormous surface deposits and once the Western Australians started flooding the whole Pacific market, there is no way that this material could compete. We had a stockpile at one time of half a million tonnes sitting at Little Current on Manitoulin Island and it just was not moving anywhere; so in 1978 we stopped making iron ore. The magnetite then went to tailings.

In 1982, we were still at this stage extracting the nickel fraction and making this soluble nickel oxide. We came up with better technology which allowed us to produce that product more effectively and more efficiently at a lower cost and we shut down the nickel oxide operation.

At that point, we were left essentially with this massive plant which was really there to produce sulphuric acid and that was a very inefficient type of operation. Nevertheless, we are still in the business of making sulphuric acid. What you see here is a unit train. Those are all tank cars full of sulphuric acid leaving Sudbury on the way south. We make about 400,000 metric tonnes of acid every year and it is shipped as far away as Chicago and Philadelphia on the eastern seaboard.

The big problem about acid production is that the transportation cost is a major element. We have one very good consumer close to hand, and that is the

uranium mines at Elliot Lake, so you just truck that piece along the road, but a lot of it has to travel this route and the result of it is that you lose money on every tonne you make.

There is the amount that we make. Starting in 1958--and we expanded the plant in three stages--we got as high as almost 800,000 metric tonnes of acid per year. We have cut that back to about 400,000. These dips, incidentally, are the impact of strikes and production shutdowns. Really, the normal level now is running through about 400,000 metric tonnes. That is the size of the contract we have with Canadian Industries Ltd., which markets all our sulphuric acid.

Why do we do this if we lose money on it? The simple reason is that we know that sulphuric acid is going to be part of the eventual solution to the SO_2 problem at Sudbury, and we are staying in that business to keep a piece of the market. We are essentially buying our share of the market right now, and that is not the best economic situation.

We talked iron ore there. That was the pyrrhotite fraction of that pie chart. Now let us look at the Sudbury smelter itself. This is it. It stretches all the way through here. You can see there is a sort of break point. There are two smelters in Sudbury, one a nickel smelter and the other a copper smelter. Those are the two residual components of the ore.

This is a diagrammatic type of flowsheet. I will try to work my way through it for you. You start with nickel concentrate coming from the mills where you have got rid of all the rock tailings, you have separated out the magnetic pyrrhotite, it is gone, and then you have made a separation of nickel material and copper material. You feed the nickel concentrate into the nickel end of the smelter. There we have reverberatory-type furnaces and converters. When you come to Sudbury in about a week's time, this is what we will be showing you.

We smelt and convert the nickel concentrate to what is essentially a nickel matte which contains some copper. That is because the mills cannot do a pure separation. Then we separate this matte by crushing, grinding and flotation, which you will see. We produce a nickel fraction which goes off to the nickel refineries and then we get some more copper, copper sulphide, Cu_2S . This is combined with the copper concentrate which comes from the mills; these two come from the mills. In the copper smelter, we have what we call a flash furnace--we will look at one of those in a moment--and again converters. There we produce what is called a blister copper, which is the feed material for the final refining step.

At all of these stages, reverberatory furnaces, converters, roasters, more converters, more flash furnaces, we make SO_2 . Here in the flash furnace, it happens to be a very high strength gas, which I will explain in a moment; so we are able to liquefy it and we produce liquid SO_2 which is a high-strength bleaching material. We are the biggest liquid SO_2 producer in North America, possibly in the world.

The principal use of SO_2 is as a bleaching agent and most of it goes to the pulp and paper industry. In Canada, there is a natural synergy. The rest of the gases coming off at much lower strength combine and go up the chimney stack. That is our problem.

In the copper smelter, to come to a very sophisticated solution, back in the 1950s we developed what is called the Inco flash furnace. This furnace is

thermally the most efficient furnace you can devise. There is no fuel added at all. The copper concentrate is fed into the furnace through these blowers and is carried in in an oxygen stream. The nature of the material is such that the copper sulphide and the oxygen combine spontaneously and they combine in an exothermic reaction; it gives off heat. It gives off sufficient heat that it melts down the material into a matte, and you perform the smelting operation without the addition of any electricity, oil, gas or anything else. It is very efficient because we have tonnage oxygen available. We make vast quantities of oxygen in a dedicated plant in Copper Cliff for this purpose.

The other beauty of it, apart from its being thermally efficient, is that since you are working with pure oxygen--no nitrogen is present--you get a very high strength gas coming off. It comes off at 80 per cent SO_2 . Typically, for acid you want gas in the range of eight to 10 per cent. As you will see later, too much of our gas is in the range of two to three per cent. This comes off at 80 per cent, and that is why we can liquefy it.

So far, we have dealt with rock, iron sulphide and copper sulphide. Now we come to the problem we have really. This is the existing Copper Cliff smelting process for nickel. Here the nickel concentrate comes from the mills and we feed it through what are called Herreschoff roasters. There are batteries of these roasters for each furnace. A roaster is a cylindrical vessel, probably 15 or 16 feet in diameter and maybe 40 feet high. Inside the roaster is a series of rotating hearths. The concentrate is fed in at the top and it gradually works its way around and is raked off from hearth to hearth and works its way down to the bottom, while at same time we are blowing heated air up from the bottom. That does two things. It dries out this material, which is wet, coming from the mill, and then it begins to combine and roast off a lot of the sulphur.

The sulphur comes off at 3.5 per cent gas strength, which is too weak to do anything with; you cannot make acid with that sort of material. And 40 per cent of the SO_2 that we produce comes off at this point in the process. That goes straight up the stack.

The calcine from these roasters is fed into reverberatory furnaces and these are fired with--this slide actually says "oil and air," but we have moved beyond that. We used to fire them with coal, and then in 1973 we switched to oil; about six months later, the Arabs put the oil price up to \$10.20, so we switched to natural gas, which we now supplement with oxygen. Instead of "oil and air," it should say "natural gas and oxygen." Charlie is scribbling frantically and we are going to get that changed before the next presentation, I think.

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We melt this calcine down and at the same time take off a slag, but we make more SO_2 in the process, even weaker this time, one to two per cent. Again, all of that 10 per cent goes up the stack.

From there, we go to Bessemer converters. There is still some iron in the material and we have to add flux and create a slag which gets rid of that. We are getting gradually purer and purer. We come out here again, though, producing more low-strength SO_2 , another 40 per cent. The remaining 10 per cent is the only bit that does not cause a problem yet, because it is in a solid form in this matte product that goes on to refining.

There we are: 90 per cent of the total SO_2 problem, and it all comes off in this area. This is the area where we have been devoting a lot of time

and effort over the past several years to coming up with alternative solutions. We have spent probably in excess of \$50 million in the past six years working on what we hope are economic solutions. We are not there yet, and I will talk to that one later. What we have been able to do over the years, partially as a result of the pyrrhotite rejection efforts and partially as a result of the flash furnace activities, is reduce our SO₂ emissions step by step.

Back in the middle 1960s, at their peak, emissions were running at about 2,250 kilotonnes per annum. Here you see the various regulatory limits that we have been working under, and we have managed to stay under all the way down the line. We used to have some fairly comfortable cushions; we do not any longer. The regulation that we are operating under just now gives us an allowance of 685 kilotonnes per annum, and last year we came in at about 635.

This is just a quick rundown of the major items in the emission regulation. The limit from 1986 was 685,000 tonnes; in January 1984 that drops to 265,000. In the meantime, we are conducting studies, carrying out research, building test circuits and running full-scale tests looking at how we can achieve this 265,000-tonne limit. Further, how might we get to 175,000? Again, how could we get to 525,000, this time at an earlier date, in 1990? We are submitting semi-annual reports; two of those have gone in and we have tabled both of those with you.

The final study in that series of reports will go in on December 31, 1988. That is the point at which we must have a flowsheet defined and we must have it designed to the point where it can be properly costed, both from capital and operating points of view, so we can review the economic feasibility. At that point, the government is committed to assessing our decisions on that matter in terms of possible need for financial assistance or reconsideration of limits. Once we get past that point and go into the implementation stage, again we will be back on the semi-annual report procedure.

This is a simplified schedule to show you the sort of work we have been doing. Here is pyrrhotite rejection. We are developing ways to improve our pyrrhotite rejection techniques. Pyrrhotite comes in two forms; one is magnetic and the other is nonmagnetic. We are very good at removing the magnetic portion. What we are working at now is ways and means to remove the nonmagnetic portion.

We have in fact gone through an exercise where on a pilot scale--this is probably one-tenth scale--we have developed a process that allows us to remove nonmagnetic pyrrhotite. We have submitted this to the federal government and obtained funding from the Department of Regional Industrial Expansion under the industrial regional development program. We are constructing a full-scale circuit right now in Copper Cliff which will probably go into operation in April this year. If that is successful, that is going to be a significant element in our reduction program.

That is what you are seeing here through 1986. We got government funding in October, and we will be operating through this period.

When we know how much pyrrhotite and therefore sulphur we can reject in that way, we will know how much is left and we will know how much acid we will then have to produce. When you know how much acid you have to produce, then you know what size of an acid plant you need. We may have sufficient capacity right now or we may not, but we will know that when we see this plant operating.

At the same time, we have been running tests on our reverberatory furnaces. Inco developed a technique called roast reduction smelting, and we ran this at full scale in our Thompson, Manitoba, operation where we happened to have an available electric furnace that could be used for this purpose. We demonstrated that this process works and would be successful in the plan to reach 265 kilotonnes. Unfortunately, we have been overtaken by time because the economics of the implementation of that process were dependent upon achieving some fairly substantial productivity gains and cost reductions within the Copper Cliff smelter.

We have had a great deal of success in Copper Cliff in the past three years independent of that, and in fact we have picked up all the gains that were contemplated in roast reduction smelting. If we were to implement that today, our costs would go up, our productivity would decrease, and we would be worse off than we are today; so we are moving away from this technique.

The technique that is coming through as the most likely solution, as mentioned in the second report, is flash furnace smelting of bulk concentrate. When I talked to you previously about that flowsheet, it showed how the nickel concentrate was separated from the copper. In this system, you leave them together and smelt them together, but you use flash furnaces, which give you that high-strength gas, and you do the separation after you have produced the matte. This is looking very promising, and we have a test that will be carried out later this year.

We have also been looking at converting methods because we know that to get down to levels lower than the 265 kilotonnes, we are going to have to capture some of that low-strength converter gas. There are various things we have been looking at in relation to what we might do in converter plants.

The first progress report--I will run through this briefly--gave some background data on our existing SO_2 emission sources. It recognized the need for significant increases in pyrrhotite rejection, because without that we would be producing enormous volumes of acid. The problem about enormous volumes of acid is not simply that you lose money on it but that there is no market for it. Acid is a commodity that you cannot just pour down a hole in the ground; if there is no end use for it, you are in an even bigger problem.

We got into the new nonmagnetic pyrrhotite rejection circuit at a cost of \$5.5 million. We have made our application, and we have since received some money on that. We were getting into studies on reduction smelting techniques, bulk smelting and semicontinuous converting.

The second report went in just a couple of weeks ago. We have received our federal funding, the construction of this is on program, and we will start up probably in April. We did carry out the reduction smelting test, and the results are being crunched through the computer right now. I have to tell you that they are not very attractive, and this directs us more and more towards the flash smelting alternative.

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Mrs. Marland: Regarding item 1, where you are receiving the federal funding for that test circuit, you know we had Falconbridge here this morning; are you going to share this information since it is federally funded? You are not doing concurrent tests in the same area?

Mr. Aitken: No. We are not doing concurrent tests. In fact, on pyrrhotite rejection, I think I can reasonably say we are some considerable

way ahead of Falconbridge in this matter. In terms of sharing the information, that is something the federal government will have something to say about. As you say, they are putting money into it.

Mrs. Marland: Have they made a sharing of the information a condition of funding this test circuit?

Mr. Aitken: No.

Mrs. Marland: They have not?

Mr. Aitken: No, that is not a standard requirement; but I think if we come through with a great breakthrough--you must remember that some of this work is patentable. That does not mean to say that Falconbridge could not have it, but they might have to pay a little bit to get it, just as we have had to pay to get a little bit of their technology in furnace operation. That is the way the business goes.

Mrs. Marland: And the federal government will allow you the patent even though it has given you the money to do it?

Mr. Aitken: The patentability of a technology is not to do with where the money comes from to develop it.

Mrs. Marland: No. But the fact is that it is federal money that has give you the ability to do the experiments to develop a system.

Mr. Aitken: What you may not realize in this is that under the IRDP system, if we are successful in this, then we have to pay it back.

Mrs. Marland: No, I did not know that.

Mr. Aitken: Yes. Once it is paid back, then that cleans up the problem of who you give it to. You can give to anyone who pays the shot then.

Mrs. Marland: You do not feel quite so guilty having had the money then?

Mr. Aitken: No.

Mrs. Marland: You are just going to take in the royalties from your patent.

Mr. Aitken: That would be a nice thought.

The Chileans are very advanced in the copper smelting industry. We have had Chilean engineers visit Copper Cliff and we have had a team of engineers from Sudbury go down and look at their techniques. In the end, we rejected their approach because we found that their objectives were different from ours. Their objectives are to run the most efficient operation they can devise and the environmental limitations placed upon them are not quite as stringent as those under which we operate. We found that we did not have the scope for SO₂ capture and we possibly were facing workroom environment conditions that we would not want to bring into Copper Cliff.

We have rejected that approach and have gone back to our own approach on what we call stretching converters; where converters may normally be in the range of, say, just short of 30 feet long, we are making them 45 feet long.

The beauty of that is that you can get more through in a single charge and therefore you have fewer opportunities to emit ground gas and so on. You have a better chance of capturing the SO_2 produced.

This is an interesting thing. We are modernizing our matte separation building right now and in the process we are increasing the capacity to handle greater tonnages of matte. That is going to be very valuable because if we go to bulk smelting, and everything seems to look that way, we are going to be handling larger tonnages; so the work we are doing right now is a step towards solving the final problem. Although it does not yet show up in reduced emissions, it is something that has to be done to allow that to happen. We are into it right now. I guess this says it: "The combination of increased pyrrhotite rejection and bulk smelting are emerging as the key elements in the overall smelter improvement SO_2 abatement program."

The other thing we are doing right now is developing new facilities that will accommodate the pyrrhotite we are rejecting. We are rejecting a material that contains about one per cent nickel, and that is a resource for the future; perhaps not in this century, but some time downstream there is a valuable resource, one that has already been mined and milled and is easily recoverable. Instead of just losing it among all of the rock reject that is also out in that area, we are impounding it in an area where we will provide safeguards against environmental degradation. One of the papers attached to your second report deals with the way that is being constructed. That is going on right now, and about \$17 million is being spent on that at this time.

That is the sort of broad picture and this is a summary slide that says where we have been. Back in the 1960s, our emissions were as high as 2,250 kilotonnes and we were containing only between five per cent and 10 per cent of the sulphur. In 1980, the base year upon which all the regulations are calculated, we were at 1,155 kilotonnes and containment of 55 per cent. This year, in actual terms, we are down to 635 kilotonnes and we are containing 72 per cent of the sulphur. The 1994 regulation at 265 requires us to get to 90 per cent containment; that is a very high level of containment.

If I may, there is one other thing I would like to talk about briefly. I read some material yesterday, and I understand that Mr. Bradley stated on Tuesday before this committee that all four corporations have reported officially that they will be able to meet pollution reduction requirements on schedule.

I am speaking only for Inco in this matter, and I am not aware of any such official statement. I believe the minister's position may be something of a simplistic interpretation of the well-known fact that technology exists which would allow the requirements of the regulation to be met but we, as a company, have repeatedly made it clear that at this time we do not know how to do that economically. That is the word that is missing in this whole thing. That is why we are involved in extensive research, development and testing programs right now, because if we knew how to do it as simply as that, then the question should be, "Why are you not doing it now?"

There are a number of ways one can achieve the regulated level. I believe Algoma has indicated it might shut down; it has already reduced production levels with consequent effects on employment in Wawa. Ontario Hydro has a luxury which none of the rest of us have: a captive domestic market. Given that, you can do lots of things with your costs in passing them on in rate increases, and the citizens of Ontario will feel the impact of that one in due course.

In the nickel business, we deal in export markets. Ninety per cent of our product is sold outside of Canada. Prices are set in the world markets; we do not control them. We are price takers; we are not price makers. We cannot pass our cost increases on to customers. This is a depressed industry; it is one that has not shared in the economic boom that other sectors of the provincial economy have seen over the past few years. Today the price of nickel at \$1.73 or \$1.74 is at the level we were getting in 1974. That goes together with an Inco performance in financial terms last year where we broke even. That is hardly an acceptable situation.

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Consequently, our objective is to develop a process that we can put in place, which will preserve the economic potential of the business, not destroy the gains we fought hard to achieve in productivity terms, and allow the Sudbury operations to be an effective world industry competitor. That is what our research and testing are all about. We are making good progress, but I think the minister was perhaps a little bit premature.

Mr. Chairman: Thank you, Mr. Aitken. Are you telling the committee that it is not a matter of technology--you are confident you can achieve an abatement strategy by December 31, 1988, for assessment--but rather you are talking about the economics of what that strategy may be?

Mr. Aitken: Yes. I think it is broadly acknowledged that technologies exist that will allow you to get to any level you want to select. You may not be in business for very long after you have got there, though, because the costs have to be taken into account.

Mr. Chairman: Do you have a projection as to the figures for R and D through to developing appropriate strategies and also, after that, a figure for capital?

Mr. Aitken: I mentioned during the presentation that over the past five to six years we have spent in excess of \$50 million. We have a program that included something like 36 different projects, many of which have already been completed to take place through the period to 1988. That one added up to \$36 million.

At this stage, we do not have an estimate for the cost of implementation of a solution because we do not yet have the solution. That is part of the activity we are working on just now. As we devise the elements of the final solution, then we do sufficient detail design on them to allow us to come up with a meaningful estimate, but that is part of the process we have to complete by 1988.

Mr. Chairman: Would your feeling be that the amount that has presently been allocated by the federal government, and I guess with matching funds, would be an appropriate or light figure with respect to what would be necessary?

Mr. Aitken: Let me make sure there is no confusion here. The elements of federal funding that we have right now have nothing to do with the \$150 million that has been talked about.

Mr. Chairman: I appreciate that and I am referring to the \$150 million.

Mr. Aitken: You are talking about \$150 million plus, of which something like \$85 million was destined for Ontario and then there would be provincial matching?

Mr. Chairman: Correct.

Mr. Aitken: At this stage, I really have no way of saying whether that is reasonable because there are four of us in this thing. Ontario Hydro is involved, we are involved and Falconbridge and Wawa are involved. It does not sound like a lot. I know I have spent a number of years in charge of Inco's engineering efforts when we were building some of our major projects. I know it is not that difficult to get through \$300 million on a project as complex as the one we are facing right now.

Mr. Chairman: This morning Falconbridge mentioned its ball-park figure would be somewhere around \$50 million to \$70 million. Certainly, \$70 million was their high limit on what they thought would be necessary. Of course that does not leave too much left for the other three participants. Would your ball-park figure be in excess of those?

Mr. Aitken: Our operation is bigger than theirs. Let me put it this way. To be perfectly honest, we would like to produce a solution which keeps our hand out of the public purse. We would rather do it on our own account. We are not saying we can yet and we may have to come for help, but until we are a bit further down the line, we do not know how much we might have to ask for.

Mrs. Marland: That is a very interesting statement and probably quite altruistic that your objective is to stay out of the public purse. However, it may be that the public would prefer you were into its purse and gave overall greater protection sooner. I understand that at this point Inco has not applied for any of the \$85 million in federal funds.

Mr. Aitken: Let me tell you where we have gone so far. We have applied to the Department of Regional Industrial Expansion under the industrial regional development program and we have had funds allocated under that program. I then applied or wrote to the Ministry of the Environment and asked how we got our matching funds. I have a reply that says we do not get matching funds on that type of thing. That is research work, and the \$150 million in matching funds is related to eventual implementation costs. There is no matching money out there right now that I am aware of.

Mrs. Marland: You have been told that the \$85 million--

Mr. Aitken: No, no. I did not ask for \$85 million.

Mrs. Marland: Sorry.

Mr. Aitken: We submitted an application to DRIE for \$5.5 million. They have authorized funding up to 40 per cent of that, which is about \$2.2 million. I then wrote to the Ministry of the Environment and asked how I go about applying for the matching \$2.2 million. The matching \$2.2 million is not available at this stage because this is classified as research activities. If it is successful and becomes an integral part of an eventual solution, then it may be eligible for matching funds, but it is not right now.

Mrs. Marland: That is really interesting. In other words, after you have found the solution, you will get the money to implement it?

Mr. Aitken: That is an interesting way of putting it. I did not put it that way, but that is interesting.

Mrs. Marland: Obviously, it would be in the interest of the province to find the solution sooner than later.

Mr. Aitken: Yes.

Mrs. Marland: In the amount of reduction that you have achieved so far, what has been the impact on your employees and the number of jobs just in ball-park figures?

Mr. Aitken: On employment levels?

Mrs. Marland: Yes. In fairness, I mean employment levels related to production. Because of the market, your production is obviously down.

Mr. Aitken: Yes. Actually, I think the impact has been minimal, but let me just explain that. I think 1971 was the peak employment year when we were employing something like 22,000 people in Sudbury and we are now down to 8,500. About two thirds of the employment has gone. At the same time, we were producing at a rate of about 340 million pounds of nickel and we are now down to about 230 million pounds.

About one third of the production has gone, but our productivity through a variety of new processes and new technologies has increased very substantially. In fact, it has at least doubled. We believe the manpower reduction you are seeing is directly attributable to productivity improvements as well as some factor for lower total output, but is not a factor related to SO₂ emissions.

Mrs. Marland: That is really good because we have always had the impression that if we were going to have the abatement measures, people would lose jobs.

Mr. Aitken: I think the fear people have is the one expressed perhaps by Wawa, that if the economics are so bad that they are forced to shut down, there is no alternative, the jobs have gone. We do not see ourselves in that position because what we are trying very hard to do is devise solutions that will stand on their own feet economically, because in the long run subsidies will catch up with producers. There are too many subsidized producers around in this business right now.

We complain about the Third World countries subsidizing their production and we really do not want to be contemplating the same thing here.

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Mrs. Marland: Would you like to go back to the question of the public purse? I think that is a very generous statement on the part of the corporation at Inco. Do you think that is very realistic?

Mr. Aitken: I think it is a good objective and a proper objective. I cannot really say today whether in the final analysis it is going to be realistic or whether we are going to have to come and say, "Here is our best assessment of what this process is going to cost, here is what the impact is in terms of capital requirements and operating and here is what we can afford."

What can you do?" That is quite possible, but it is a healthy situation to have companies saying, "We are going to do our best to try to do everything on an economic basis."

Mrs. Marland: On your own?

Mr. Aitken: Yes.

Mrs. Marland: At the moment, I suppose you have the satisfaction that you are below the control order anyway.

Mr. Aitken: Yes, we are.

Mrs. Marland: Thank you.

Mr. G. I. Miller: When you are spending that massive amount of money already, which you have put in place, does that modernize your plant to make it more efficient and put you in a better position down the road? Using Algoma as an example, maybe it is not in that position because it has not moved ahead.

Mr. Aitken: First, let me set aside the Algoma matter, because I am really not in a position to talk about its activities. Let me talk about ours.

We have spent moneys in both ways, if you like. Some of it has gone on research activities, which at the end of the day one rejects as being the wrong solution. It was a good idea at the time, but for whatever reason, it did not quite work out. We are also spending money right now on modernizing and upgrading our matte separation activities. As I said, this will give us the capacity to handle much larger tonnages of matte, which will be there if we go to the bulk smelting route. The money we are spending on this modernization is doing just what you are talking about; it is putting us in a better position and is one of the things that may help us towards achieving this progress on an economic basis.

Mr. G. I. Miller: I can see by the projection you put on the board that in order to get that other 40 per cent, you have to start at the foundation, and that is part of the overall cost of doing that. You also mentioned Chili and that its environmental restrictions are not as great. Have you had an opportunity to visit any of those areas to see exactly what is happening?

Mr. Aitken: Not personally, but a team of three of our engineers did go down and toured the smelters and the big, high-quality operations they have. They have very rich ore grades and good technology. Our engineers looked at it and their analysis was that the opportunity to capture SO_2 was no greater in their approach than in the one we have been working at developing ourselves. We were looking for a shortcut solution here.

You do not have to invent everything. It does not have to be in your own backyard all the time. Go out and get the best, but if it is no better than your own and it if it also exposes you to a workroom environment that is not as good as you would like to have, then that is the wrong way to go. Do not build in a new technology that brings different problems with it. Try to build one that eliminates some problems.

Mr. G. I. Miller: I guess that leads to one of the purposes of the committee, which is for Ontario to set some examples so that we can encourage

our friends to the south, because pollution knows no boundary. While we commend you for your achievement, I think the government has to have those tools to work with too to set examples for how it can really be supported and the reasons for it, the need for it. Sudbury is a good example because 20 years ago it was a devastated area, but that growth is coming back and there has been tremendous improvement. Do you have any advice to the committee that might be of use in achieving it on a provincial basis?

Mr. Aitken: Could I turn this one over to my colleague, Charlie Ferguson, because he has been involved in a lot of transboundary work? He might have some thoughts on this.

Mr. Ferguson: It is difficult to compare any other smelter with our own for a number of the reasons Mr. Aitken pointed out. We are in the nickel business and no American smelter is in the nickel business. The American smelters are largely copper smelters. Copper has its own problem. Copper is very low priced and a lot of the copper smelters in the United States are very old and there are a lot of expensive renovations to be made. To modernize would be very expensive and the price of copper makes that very expensive to carry.

I really do not know how to compare what we have done. Several American smelters have seen fit to purchase the Inco flash furnace to afford modernization of their own, to improve the workroom environment in the copper smelters and to improve their unit costs. Of recent date, two new flash smelters have gone on stream in the United States employing the Inco flash smelter process.

Mr. G. I. Miller: Again, I think we have to keep using the technology we have in place and try to expand on that in order to be competitive.

The final question I would like to ask is about the use of sulphuric acid for fertilizer purposes. That was mentioned this morning. Have you done any research or is there anything in the works that might utilize that for agricultural purposes and to find a broader market?

Mr. Aitken: I have been involved on a number of occasions with the company, our union, local 6500, the Sudbury regional council and with two of Mrs. Grier's colleagues who are the local members. I have promoted for some time the idea that there is potentially an opportunity to put together the phosphate rock deposits which exist in Cargill near Kapuskasing and the SO₂ generated at Inco, which could be used to make sulphuric acid, which is the basis of the fertilizer business, to set up what would essentially be a new fertilizer production industry in this province.

The trouble about all of this is that it seems, as with many commodities, there is a bit of a glut in the world in terms of availability of fertilizer. It is not that there is not an Ontario market because there is. Canadian Industries Ltd., which used to make fertilizer here in Ontario has shut down. That is because it is cheaper to bring it in from--

Mr. G. I. Miller: Florida?

Mr. Aitken: Florida or wherever.

If you want to put government moneys to work effectively, you might look at things such as helping that type of fledgling industry. You would need the

Ontario Northland Railway, for example--that is an Ontario government organization--to move all that phosphate rock from Cargill to Sudbury. There is not a fertilizer factory in Sudbury, but one could be built. It is not a business of which we have any particular knowledge, but lots of people do. It would seem to me that maybe there is an opportunity even for an Ontario crown corporation there, if that is not a bad word.

Mrs. Grier: My colleagues will certainly be talking to you.

Mr. Aitken: Is that right?

What you end up with is putting a heavy industry into the Sudbury area. This is very important because there has been a lot of job creation. The Sudbury people have done tremendously well over the years, but many of the jobs that have been created do not do much for the unemployed miners and they do not do much for their teen-age children. There is a need for heavy industry and it probably is not going to come out of the nickel business because so much of our effort is devoted to improving our productivity and to producing what we are going to sell with less. You need to get something else in there, and what is wrong with a good fertilizer industry, particularly when, as I say, there is a local market? Ontario consumes quite a lot of fertilizer. I am a proponent of that thought.

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Mr. G. I. Miller: The agricultural industry is perhaps in as difficult a situation as the nickel industry as far as prices are concerned, particularly in tobacco, which is under lots of pressure. It is a farming industry but in cash-crop farming generally, the prices are at Depression levels. If there is a brighter side to it, and there has to be a brighter side, this is an industry that could be explored more closely.

Mr. Chairman: Thank you, Mr. Miller. The idea of that sort of crown corporation may have some merit, but I would be a little wary of suggesting a name such as Growcor. It has some association with another firm we have been involved with in the past.

Mr. South: Can you realistically compare your production costs to other big mines such as New Caledonia? Would that be the lowest-cost production per pound of nickel?

Mr. Aitken: No, I do not think it would be.

Mr. South: You would think it should be. Is it not open-pit mining as opposed to shaft mining?

Mr. Aitken: Yes, it is.

Mr. South: It seems to me the cost differential in those two things would have to be pretty significant. Is that not a big part of the total cost of producing a pound of nickel?

Mr. Aitken: It is one factor, but one of the problems with mining those surface laterite deposits is that they are not amenable to upgrading in the way that an underground hard-rock deposit is. We can crush, grind and mill this material and float a lot of the reject out. They cannot do that because laterite is essentially like a handful of mud.

Mr. South: What kind of percentage are you talking about? When you bring that stuff out of an open pit, what is the percentage nickel as compared to yours, approximately?

Mr. Aitken: In Sudbury we may be mining a combined copper-nickel grade in the range of, let us say, 2.6, 2.7 or 2.8 per cent, something like that. The laterite producers have no copper there. Their grade is probably about 2.5 to three per cent nickel; so it is the same range, but the difference is that we can relatively cheaply go through this mechanical milling process and move our grade up to 11, 12 or 13 per cent while they are still stuck at 2.5 to three per cent. That is what then goes to the furnace. Whereas we feed, let us say, 12 per cent to furnace, they feed three per cent to the furnace, and they have to melt down all that mud. Their energy costs then rapidly overtake the mining costs. You should not assume that because it is a surface mine it is going to be a low-cost mine.

Mr. South: I see.

Mr. Aitken: I guess everyone in the industry would like to know what everyone else's costs are. It would make life very interesting and we spend a fair amount of time trying to calculate these things. Leaving aside the Russians--because no one has any idea what their costs might be and the only assumption you can make is that their costs will be whatever they need to be; if they want to move nickel on the western market, it will come on as the lowest-cost nickel in sight. Leaving them aside and you look at the rest of the field, we think Inco is pretty good. That does not say a lot for the business right now because we managed a break-even performance last year.

Mr. South: What are the reserves there? What is your best guess? At your present production, what have you got; another 25 or 100 years?

Mr. Aitken: Traditionally, we keep in front of us a 20-year mine plan, and we are bringing on reserves to maintain our production level over a 20-year period. We do not go beyond that because it begins to get a bit theoretical, but we are at the stage where we can see 20 years out in front and we are not dropping off the end of the precipice. There is a lot of material left there, well into the next century.

Mrs. Grier: Mr. Aitken, I would like you to expand a little, if you could, on your beginning statement that the minister's assertion that you had reported officially to be able to meet the requirements on schedule perhaps needed to be qualified. Can you expand upon that and maybe explain to me more precisely what kind of conditions are required for you to meet that target?

Mr. Aitken: As I read the transcript that I saw, the minister said that all four corporations have reported officially that they would be able to meet pollution reduction requirements on schedule. That is a quote.

Mrs. Grier: That is exactly right; that is a quote. He went on to say, "Our government intends to hold them to that commitment."

Mr. Aitken: That is rhetoric. I just stopped at the quote about meeting the requirements on schedule. I am not aware of any official statement that says we can do this. What I am aware of is a number of statements that say we do not know how to do it economically at this time. We have said that consistently ever since the regulation was issued back in December 1985.

I think that was recognized by the ministry and that is why we have this

three-year period, a program and reporting on the tests we are doing, what is the progress and we have to go to see them; Charlie and I were there on Monday this week discussing those progress reports. I just do not know where that comes from. The position, as far as we are concerned, still is that today we do not know how to do it economically.

We can see technologies beginning to firm up. We can see real progress in that pyrrhotite rejection area. We can see real promise in the flash smelting area, but we have to get to a point where we are sufficiently confident with a flowsheet that we can say to the engineers, "Put some real design around that, nuts and bolts, mechanics and electrics, estimating and operating costs, manpower levels and all the rest and then we will know whether we have an economic project."

Mrs. Grier: Can you give us any kind of a schedule as to when you will be able to do that? My worry is that it is so late, so close to 1994 when you finally arrive at your conclusion as to whether you can do it, there will not be time to have it in place before the target of 1994.

Mr. Aitken: No, I do not think that is the problem, because our objective is to have the metallurgy and the chemistry in place essentially around the end of this year with most of the engineering design and estimating work going on through 1988.

That gets us to the first hurdle. Let us assume some discussions will take place during 1989 as to precisely what is going to be done and how it is going to be funded. Supposing the whole of 1989 went that way--I do not expect it will--you would have 1990, 1991, 1992, 1993 and 1994. You want it operating in 1994. You have four years there. You can build an awful lot of things in four years. Speaking as an engineer who has been involved in doing that type of thing, I am not worried about that prospect.

Mrs. Grier: While not wanting to give the government assurance that you can meet it, you are not ruling out the possibility of meeting it?

Mr. Aitken: Not at all.

Mrs. Grier: Presumably, the major hurdle in meeting it is going to be the cost of doing what you need to do. When do you anticipate knowing what that cost will be and knowing what kind of a contribution you may be forced to ask the government for?

Mr. Aitken: We are programmed to be in that position at the end of 1988.

Mrs. Grier: I see.

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Mr. Ferguson: As required by the regulation.

Mr. Aitken: That is the way the regulation is set out.

Mrs. Grier: While you indicated earlier that you did not wish to have government assistance in implementing all of this, you are not ruling that out if that is one of the conditions that is required for you to meet the targets?

Mr. Aitken: No. That is correct. I think it is a good objective to have, to try to do it without assistance, but if you cannot do it, then we come back to the government and we have to sort out who can do what.

Mrs. Grier: How do you reconcile that position with your already made request for assistance with research and development funding, or are you separating capital contributions from research and development? You already have the federal DRIE funding, have you not?

Mr. Aitken: Yes.

Mrs. Grier: You have no problem with asking for that?

Mr. Aitken: I guess we better find out how it works because everyone else is doing it. We are finding out how it works. We have some funding there. We did not get any funding from the province, but we are told under what circumstances that funding would be available.

Remember, we are still in a position where if that work proves successful, we give the money back. Those are the rules of the game. So you do not know whether you have anything yet. You have some assistance to help you along the road.

Mrs. Grier: That DRIE funding is a loan?

Mr. Aitken: No. It is not exactly classified as a loan. On the basis that some research will succeed and some will not, the funding is there, and in the event that, with all the best efforts, you are unable to make this thing work, then that is a piece of research that has been paid for, we have learned something from it, but it is not going to produce the desired result. If, on the other hand, it is a total success and we simply build it into the ongoing operating plant, then they say that is not the sort of activity that qualifies under the IRDP so we give the money back.

Mr. Morin-Strom: That does not make any sense.

Mrs. Grier: There is a bit of an incentive there for it not to work.

Mr. Morin-Strom: That is right. That is just reverse incentive.

Mr. Aitken: No, not really. I think that is where logically one would say: "All right. If it does not fit under the research purse, then that should fit in the \$150 million designated for cleaning up smelters. So transfer it out of there and into there. At the same time, provincial government, you come in with your matching funding."

Mr. Ferguson: Let us keep it in perspective too. The level of support is a maximum of \$2.2 million, and we have been spending many millions of dollars each year on research. We will probably have spent \$60 million or \$70 million in this decade on research, so that is not exactly a major part of the overall research program.

Mrs. Grier: In the minister's response to your first report, the ministry pointed out that it had supported your application for federal funding. Was that support an essential factor in granting the funding or would you have got it without their letter of support?

Mr. Aitken: I think we would have got it.

Mrs. Grier: You would have got it anyway.

Mr. Aitken: I think we had a good case when it was going through. It did not do us any harm. I am sure if they had said, "We do not like that," we would not have got it, but I think it was a good case.

Mrs. Grier: We can all write support letters.

Was there any consideration in your control order of a phased reduction? With Hydro, I think there is an amount in the middle, between 1984 and 1994, that has to come in. With you, it is just one big jump.

Mr. Aitken: No. The objective which is cast in stone is 265 in 1994, but we are also asked to look beyond that at 175 and ahead of that at 525 in 1990, but 525 is not specified as a level that must be reached. We have to study that and it is another of the things that will come out of the final flowsheet determination by the end of 1988.

Mrs. Grier: Does that look realistic at this point or is it too early to say?

Mr. Aitken: It is too early to say on that one. In a sense it is an arbitrary number. I suppose all of the numbers are a little bit arbitrary so I am not sure that 525 has any particular significance. We go for 265 and whatever it is, if it is 550 or 500, whatever falls out of it is what will happen.

Mrs. Grier: On the various alternative methods that you have talked about and have been exploring, can you attach to each of them a level of abatement and do you know what each one of them will achieve?

Mr. Aitken: Yes. We will when we are a little bit ahead of the game. A lot of the things we are doing with the pyrrhotite rejection is to build a full-scale line. This is a very important point in our whole strategy. We believe it is absolutely essential that you test whatever you are going to do at full scale, because the world is full of bitter experiences of good laboratory theory being applied at full scale and failing. We are trying to do this work at full scale.

We will have one sixth of our mill in Copper Cliff converted to a full-scale test circuit. When we have run that, then we will be able to say very precisely how much that particular element is going to contribute. We are going to run, later this year, a full-scale test through our flash furnace and when we do that on bulk smelting, we will know precisely what that will contribute. So all of that is going to come out of these tests we are doing.

Mrs. Grier: The 1982 federal-provincial task force that looked at you and at Falconbridge went fairly exhaustively into various methods of reduction and the cost-effectiveness of these methods. It was able to attribute, for example, to the pyrrhotite rejection a certain level of abatement and a dollar figure. What response did you make to those and how much has that contributed to where you now are?

Mr. Ferguson: They were referring to a pyrrhotite rejection process that we installed in the period 1980 to 1983. That is behind us. We are now examining the feasibility of improving the rejection of nonmagnetic pyrrhotite and that is research ahead of us. The Ontario-Canada task force report was really dealing with something that was put into place a few years ago.

Mrs. Grier: Have you implemented portions of the task force report?

Mr. Ferguson: The only part of the task force report that referred to pyrrhotite rejection was in place and that, in part, was why the allowable emission levels were altered from 2,500 tonnes a day to 1,950 tonnes a day. In the Ontario-Canada task force report, the sole process that the task force identified that appeared to be economically attractive was the Inco roast reduction smelting process and, as Mr. Aitken pointed out, there have been so many productivity improvements made in the smelter that if that process was applied today, it would actually increase our costs and not act as a productivity improvement.

Mrs. Grier: I thought the task force had identified 54 technically feasible abatement programs, of which they identified eight as being cost-effective.

Mr. Ferguson: Actually, there were five individual steps and they had combinations of them that made a total of eight, but of the eight, the one, the Inco roast reduction alternative, which was item IV or V, referred to the Inco roast reduction process which the Hatch report, a report that we commissioned, indicated would cost \$600 million to implement. The improvements that have been made since that time have indicated that would not be a process to follow, for a variety of reasons. With the other processes, we indicated to the ministry that we did not believe there was any reason to justify examining them.

Mrs. Grier: But in the minister's reponse to your first report on Countdown Acid Rain, it is indicated that you were invited to state whether you intended to deal with the abatement options outlined in the task force report. You had not, prior to that date, which was July 1986, indicated to the ministry how much of it you were going to do or could do.

Mr. Ferguson: Actually, we had received those comments literally days before we submitted our second report so we were not able to integrate our response to the ministry's first comments in our second report. We certainly will be able to integrate any ministry comments in our next report because the ministry has indicated there will be a much more timely response.

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Mr. Aitken: In fact, we met with the deputy minister and some of his staff of Monday of this week to review their review of our first report.

Mrs. Grier: I see. Six months after?

Mr. Aitken: That is right. Their review came out on December 12, by which time we were hard at work on the second report. The second report did not refer to those comments at all. I think you will find that in future six-monthly reports, the ministry assessment of the previous one will be out in time for us to comment, and that is where the comments will be; but not being able to do that between the first and the second reports, we visited with them on Monday and discussed these points at some length.

Mrs. Grier: When you are going down a number of different roads in order to meet these, how much flexibility is there? What is the contingency plan if it proves that one area of abatement reduction, in which you have invested a lot of time and energy, does not work?

Mr. Aitken: You could say we have been pursuing two basic approaches. One is pyrrhotite rejection--in other words, getting rid of the sulphur before it gets into a gaseous state--and the other is smelting alternatives. We are doing fairly well on the pyrrhotite side. On the smelting alternatives, we have gone through one--namely, roast reduction smelting--in great depth. We have come to something we know is technically feasible but is no longer economically possible and we are moving on to the second one. It is correct that as you move down the line, your options begin to reduce, but hopefully your degree of confidence in what you are working on increases.

Mrs. Grier: Perhaps I could briefly explore one other area. I know from the vegetation that has grown in Sudbury over the years, you have done a lot of work in regeneration and changing the landscape from what it was 20 years ago. I believe you have done fairly extensive research on the effects of sulphur dioxide emissions. Yesterday we had some very qualified evidence from the Ministry of Natural Resources that aside from point sources, such as around Sudbury, there was not a great deal of evidence that sulphur dioxide emissions affected trees and vegetation. What have your results been?

Mr. Ferguson: I think we know more about acute effects rather than long-term chronic damage. I do not think it is any secret that years ago, during the peak years of emissions in Sudbury--I was born and raised in Sudbury; so I am reasonably well aware of the conditions there--the SO₂ often reached the ground in concentrations that were damaging, particularly to such vegetation as trembling aspen and white pine. The evidence is there.

Since the peak years in the 1960s, things have changed dramatically. Emissions are much reduced; they are only about 30 per cent of what they were when I joined Inco, as I like to say, but Roy does not buy that one. Dispersion is improved; that is, the SO₂ is released through a tall stack at high velocity. What is not often known is that as a result, we frequently stop smelting during the periods of spring and summer when dispersion is less than satisfactory. It is what we call a supplementary emission control program. It is a computer-driven program that predicts what will happen with the plume and then the smelter has to respond to it.

Nothing is perfect, but we have been able to largely eliminate conditions where sulphur dioxide can prove damaging to vegetation. I think the combination of lower emissions and emitting them under more controlled conditions has left a legacy of clearly improved vegetation performance.

Mrs. Grier: Finally, we always concentrate on the SO₂ coming out of your stack. Does anything else come out of your stack?

Mr. Ferguson: Certainly.

Mrs. Grier: What else comes out?

Mr. Ferguson: Perhaps we did not do a good job of advertising the things we did. For instance, it was commonly viewed in 1972 that Inco built a \$25-million superstack, when in fact what really went on in the period of the late 1960s and the early 1970s was that Inco modernized the mills to reduce the amount of sulphur in the smelters; it significantly reduced the amount of SO₂. That was about \$85 million, and concurrent with that, \$20 million was spent on collecting all the gases in the smelter and cleaning them, removing the dust from the gases. There was about \$4.5 million to vent these gases up this tall stack or superstack. About \$4.5 million or \$5 million worth of stack and \$110 million or so of other technical improvements were carried out at that time to change what went on in Sudbury.

When that went on, dust emissions were reduced by over 90 per cent. The smoke from the smelter operations are never of just gases; they are particulates and all the gases were passed through high-efficiency electrostatic precipitators, cleaning devices that are used for hot gases, gases over a few hundred degrees. The gases are clean now, and that has again provided another change because, as you know, the dust that would leave a smelter would reflect the composition of the ore; so there would be heavy metals in the gas. The amount of dust loss was dramatically reduced by cleaning all the gases. That is before you--

Mrs. Grier: There is no dust and no particulates?

Mr. Ferguson: There is never no dust. It is a very clean gas now, and that is what changed when the superstack was functioning.

Mrs. Grier: What else comes out?

Mr. Ferguson: We do have some dust, but the dust has been reduced by about 95 per cent, or as low as the electrostatic precipitators can clean the dust.

Mrs. Grier: So there are no heavy metals?

Mr. Ferguson: There are always heavy metals; that is what we mine. You would find the dust would consist of calcium, magnesium and silicates, which is basically the rock. Also, if the ore is about one or two per cent nickel, the dust would be about one or two per cent nickel, about one or two per cent copper, etc. The dust basically is fine particles of the ore; it would look very much like the analysis of the ore.

Mrs. Grier: Thank you very much.

Mr. Chairman: I would direct the committee to appendix 1 of Inco's first report. There is a copy of the DRIE agreement in there. I think it is section 5; I am not sure. Section 6 refers to the recovery and repayment. I just wanted to clarify that it is dependent not upon working but rather upon the sale and therefore realized profits of the product, which may very well follow from the fact that it works, but does not necessarily.

Sorry. The researcher indicates it is appendix 1 to the second report. I apologize.

Mr. Partington: Mr. Aitken, I noticed in the Countdown Acid Rain statement attributed to the chairman of Inco that he said the company would cut its SO₂ emissions in half to a level of 350 kilotonnes per year by 1994. That seems a pretty positive statement. Yet I detect from what you say today that you have some uncertainty as to whether you can achieve a 60 per cent reduction by 1994.

Mr. Aitken: That quote from Chuck Baird's speech to the annual meeting in 1985 came at a time when we had completed all the necessary test and engineering work on the roast reduction smelting process. We knew that process could get us down to 350 kilotonnes a year. That was more than was being asked for by the federal-provincial agreement. Perhaps for the first time, Inco got out in front of the band and said, "Here is what we can do." He made a commitment that the company would do this. Six weeks after that, I guess, we had an election. That was based on a specific process, one which we new would get us to that level; it would not get us to 265 kilotonnes.

Mr. Partington: So there is a dramatic difference from going from 50 per cent to 60 per cent?

Mr. Aitken: Yes, there is. You are out of one flowsheet and into another one.

Mr. Partington: Could you tell us on what technical basis or were there any discussions with you as to why 60 per cent was picked by the government and how it could be realistically achieved?

Mr. Aitken: The government actually chose a figure of 50 per cent.

Mr. Partington: After the election, in Countdown Acid Rain, why was the 60 per cent figure picked instead of continuing on the 50 per cent?

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Mr. Aitken: There was a fair amount of discussion and we could not see any rationale for this new and arbitrary number; it did not relate to any particularly identified technology. In fact, I think you will find various quotes in interviews that took place soon after that where we said, "We don't know how to do it and the government doesn't know how to do it either."

Mr. Partington: There is a real possibility now that it might not be achieved.

Mr. Aitken: No. You can always get to wherever you want to go if money is no object.

Mr. Partington: But assuming money is an object, you were confident at the 350?

Mr. Aitken: That is correct.

Mr. Partington: Assuming money still continues to be important.

Mr. Aitken: Then there is a question mark. It is a question mark that we are working to try to resolve right now. We hope we will have the answers by the end of 1988.

Mr. Partington: And one answer might be a commitment by the government to put in whatever money is required to help you get to that point.

Mr. Aitken: That is one way to go.

Mr. Chairman: Mr. Poirier.

Mrs. Marland: I have a supplementary.

Mr. Chairman: Sorry, Mr. Poirier; perhaps you would not mind waiting.

Mrs. Marland: To get back to the question of the money--and you just said again, Mr. Aitken, that if money were no object--is the federal \$85 million to this province tagged for implementation or is it just the provincial money that is going to be tagged for implementation? Earlier, in answer to my other question, you said, "The money is for implementation, not for the research." Is the \$85 million from the feds also only for implementation and not for research?

Mr. Aitken: That is my understanding.

Mrs. Marland: I see; so what we need to do is get the money where it needs to be.

Mr. Aitken: Yes. What this really says is that money is for the period, let us say, 1990 to 1994, when we are building new furnaces, acid plants or whatever.

Mrs. Marland: This committee may well decide it can be most constructive in resolving the problem by trying to get the guidelines for that money allocation amended so the problem is addressed by the research, and since Inco is so generous about being financially independent, it may by then be able to find the money for the implementation if it had the money for the research.

Mr. Aitken: That would be a good solution. I cannot really argue with that. Certainly there is money being spent right now. I suppose what the federal government may have clearly in its mind, though, is that when you do come to building the final answer, whatever it is, it is probably going to cost a lot more; so you had better keep some money available for that or you might find you have developed the technology but you have no money left to put it in place.

Mrs. Marland: Certainly, they have the cart before the horse as far as I have heard today. Anyway, I do not want to hold the floor any longer.

Mr. Poirier: The following question, Mr. Aitken, is very honest. It is based on an impression. I would like your reaction to it. This morning we heard Falconbridge and this afternoon we hear you. The overall impression I am left with is that Falconbridge seems to be facing the future with a lot more optimism than you are. It would be interesting to find out why you would feel there might be this difference.

Mr. Aitken: It might have something to do with the fact that I think we were asked to do rather more than anyone else and that the limits which they are facing might be much closer to being within their grasp. I do not think we are trying to be pessimistic in this, but we do want to be realistic in everything we say.

We see a lot of good results coming out of the work we are doing, and we know we are moving in the right direction, but we are expressing a number of what I think are legitimate cautions. I cannot really speak for Falconbridge, but they may feel that to the extent they are required to reduce them--in fact, I am not sure they are required to reduce, when I think about it; I think they are below their required limit right now. That would give one good grounds for feeling confident about one's ability.

Mr. Poirier: According to you, would it be a question of the absolute quantities that might make the difference between the requirements that were asked of them and what has been asked of you? How would you react to that?

Mr. Aitken: No, it cannot be the absolute quantities. In terms of total output, our operation is greater than theirs. We produce probably three times their amount of nickel and copper; so the two amounts do not relate in absolute amounts. Falconbridge has a smelter which is more modern than the Inco smelter. They have certain opportunities to adapt some of the

technologies that have been developing over the past few years and it may indeed be easier for them to achieve their targets than it is for us.

Mr. Poirier: The basic technology of how both ores are smelted are basically the same in both places, I presume.

Mr. Aitken: No, they are not, in fact. At the moment, Falconbridge produces a bulk concentrate; it smelts a bulk matte and does all the separation at its refinery in Norway. We separate the nickel and copper before the smelter and we smelt them separately. The technologies are quite different.

Mr. Ferguson: There is significantly less copper also. The Inco ores are roughly one to one, copper to nickel.

Mr. Aitken: They have some high-copper ores too, though, Charlie.

Mr. Ferguson: But not what passes through the smelter.

Mr. Poirier: Right. So the technology being different, obviously costs might be different.

Mr. Aitken: Yes.

Mr. Poirier: You are saying their technology is more modern, or would that be a safe word to use?

Mr. Aitken: Let us say, if you look at our flash furnace technology, there is not a more modern technology than that. They have electric furnace smelting, and that is more modern technology than we apply in the reverberatory furnaces. On the other hand, we have changed the mode of operation of the reverberatory furnaces; we now use oxyfuel burners, and there is nothing more modern than that. When you get into this, you really are comparing apples and oranges and it is not very easy.

Mr. Poirier: That is what I gather. So it is hard to make a parallel between you and Falconbridge in that sense?

Mr. Aitken: Yes, really. There is a parallel in what is sitting in the ground, and there is a parallel in what we sell to the customer, but in between there are a lot of differences.

Mr. Poirier: How can we sum up why there was what might appear a tougher requirement on your part asked by the provincial government?

Mr. Aitken: I guess you would have to say, as they have said to us, we are the biggest emitter, and we are going to provide the biggest piece of the answer. That is the sort of regulation that was placed upon us.

Mr. Chairman: Mr. Morin-Strom is not here; so how about Mrs. Marland?

Mrs. Marland: Mr. Aitken, you said at the beginning of this afternoon that the technology exists, perhaps not economically; if we get back to how we can help you with the use of the federal funds, is the argument that we need to research an alternative technology that would be more economical?

Mr. Aitken: I do not think so. Let me try to give you another apples and oranges sort of example.

Ontario Hydro has a quite different problem from what we have. They produce low-strength gases, but they do not produce them in anything like the volume we do. Therefore, scrubbing in one form or another, whether it be wet or dry, is a good approach for them to pursue. In the final analysis, you could apply that in a place like Sudbury, but it would be crazy. It would be such an enormous thing that it would swamp everything else in sight. The technology works, but it does not make sense to follow that particular one. In our case, it is much better because we can conceivably produce higher-strength gases to pursue acid or even liquid SO_2 if we can expand that market.

I think you will find we are on the right lines in terms of having selected the type of technology to pursue. It would be a mistake to go off on to one of these other ones because it just would not make any economic sense at all.

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Mrs. Marland: You said this afternoon that the technology exists, but in fact, it does not exist realistically in your industry.

Mr. Aitken: You are using the word "realistically." I use the word "economically," but we are saying the same thing.

Mrs. Marland: Yes.

Mr. Aitken: With a chemistry textbook, you can take it all out. There is no doubt about it.

Mrs. Marland: Right.

Mr. Aitken: Realistically or economically, no, it would not do the job.

Mr. Ferguson: We really have to find a process. I do not want to discount the capital costs of the process, but we have to find a process that will not unduly change our costs of producing a pound of nickel.

Mrs. Marland: Yes.

Mr. Ferguson: There would be methods of capturing SO_2 that would be low capital, but they would have unduly high unit operating costs. We have to find a technology that will produce a clean work environment and afford high recovery. We want to care for that ore reserve and not run an inefficient operation. We have to have a process that will offer at least equal unit costs to what we are trading off.

Mrs. Marland: I appreciate that because the end of that graph is whether or not you are in business. That is not difficult to understand. On one of your slides, you illustrated that in December 1988 there was going to be a discussion re the financial assessment. I suppose that is another one of these step-forward or step-back points.

Mr. Aitken: Yes, it is. I think that is one where by that time we have to know what can be done, what cannot be done, what it will cost and what we can afford. We are going to be talking with the government and they are going to make their assessments as to whether they agree with us. If they do, how are they going to help us out of this position where we cannot afford it, let us say? There are two ways to go on that. Either you put money up to make it affordable or you change something.

Mrs. Marland: By change something, do you mean give you more than six years at that point? Is that what you mean?

Mr. Aitken: Or change a level.

Mrs. Marland: Yes. That is what intrigues me about your financial independence, but you may get to the point where you are finally going to say: "There is only six years left. Perhaps we will finally accept some public funds."

Mr. Aitken: We may have to, but we will not give up on our objective to try to do without it because philosophically we would rather stay with that.

Mrs. Marland: Yes.

Mr. South: You would rather fight than switch.

Mrs. Marland: I have another question that intrigues me about the beautiful slide of the very long train with sulphuric acid tank cars on it.

Mr. Aitken: Oh, yes.

Mrs. Marland: It intrigues me obviously as a resident of Mississauga for 30 years. I was there during our derailment in 1979.

Mr. Aitken: Yes.

Mrs. Marland: Is that length of train permissible with that number of sulphuric acid cars once you get away from your plant?

Mr. Aitken: Yes. That goes all the way to Niagara Falls and points south.

Mrs. Marland: With that number of cars?

Mr. Aitken: Yes.

Mrs. Marland: That is interesting. Thank you.

Mr. Aitken: I live not far away from here and I seem to have stopped at a number of crossings and watched all those cars go past. It takes forever.

Mr. Wiseman: Following along on what Mrs. Marland was saying, we heard this morning that you could not go to the corner store and buy this technology. You could not buy it and put it in place. I think maybe she cleared it up a little. You are not saying if you had tons of money, you could go out and put it in place tomorrow or start to put it in place tomorrow. You still have to do the research.

Mr. Aitken: Yes.

Mr. Wiseman: You have to go to the chemistry books and one thing and another.

Mr. Aitken: Sure. You have to be very careful that whatever you do does not create another problem, because there are lots of examples of that where let us say you solve an air problem and you end up with a water problem in its place.

Mr. Wiseman: I guess you are saying the same as Falconbridge this morning, that you are working at the research and development of it. Are you doing the same? Are you working in-house as well as with some of the universities?

Mr. Aitken: Yes.

Mr. Wiseman: I asked them the question this morning about selling part of the technology when it was finished. I believe I am quoting them right, that most of that technology they give back and forth to one another. It is very hard to sell that technology. Now you had mentioned that there are certain patents and one thing and another that you can sell and recoup some of the money. I thought that was probably the route to go.

Mr. Aitken: I know we have a lot of patented technology. I know Falconbridge does too because I know we have bought some from Falconbridge. I ran one plant that would not have run without some Falconbridge technology on it.

Mr. Wiseman: I was wondering if the federal government put up a fair chunk of money, but I understand from you that you put up about \$70 million over the 10-year period. Your total commitment to research and development, if I understood you right, was just a bit over \$2 million of that.

Mr. Ferguson: That was one particular piece of research that we did request help from and the level of help was a couple of million dollars.

Mr. Wiseman: If you did recoup some of this and royalties for your patent or whatever, what the federal government would have put in would just be peanuts really. They would have no real recourse to come back at you for getting some of that because you were recouping some of your research and development costs.

Mr. Aitken: I do not think so. I do not think they did.

Mr. Wiseman: You are in Quebec, are you not? You have smelters?

Mr. Aitken: No. We might be at some time in the future but not in the nickel industry.

Mr. Wiseman: I was just wondering about other provinces that you may do business in where you might have a mine that has a similar plant.

Mr. Aitken: Oh, yes.

Mr. Wiseman: I was a little surprised that Ontario has research and development money from the federal government, but there is nothing from the provincial government. I just wondered if you were doing business in Quebec or some other province, where both the province and the federal government were putting up research and development money.

Mr. Aitken: We do operate in Manitoba and we have a mine and smelter there. We are somewhat further behind in the establishment of regulations and so on for Manitoba. We have not really come to that point yet, but I guess the federal \$150 million is intended to cover all of the provinces east of the Saskatchewan-Manitoba border. That one is going to be divvied up.

Mr. Wiseman: The only thing that surprised me yesterday when we heard from the Ministry of the Environment was that they were asking you to meet these conditions by 1994. However, as you said--or maybe it was Falconbridge this morning--they have very little idea of how you are going to get there. You are supposed to tell them at the end of 1988.

Mr. Aitken: Yes.

Mr. Wiseman: I think it would have been good for them to put in a little bit of research and development money as well to help you along the way rather than just saying you have to achieve these goals but offering no money. We also found out yesterday that there is a verbal commitment for the matching dollars. If I were you people, I would make sure that was a written commitment of matching the \$85 million for Ontario. That is \$85 million by the province and the federal government.

Mr. G. I. Miller: They will keep their promise.

Mr. Wiseman: Time will tell. I would want it in writing as a businessman.

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Mr. Morin-Strom: I was interested in a couple of subjects that were brought up. One is the big stack, which was a major cost to the corporation in the early 1970s. It certainly helped the problem in the Sudbury area, but I take it that it resulted in dispersing the problem over a much wider area. Do you think the big stack was a good idea?

Mr. Aitken: Yes.

Mr. Ferguson: It was inescapable. I guess you were out when I was discussing the point on the big stack.

Mr. Morin-Strom: I heard a bit of the big stack discussion.

Mr. Ferguson: A tall stack is inescapable regardless of the level of control. When you think of smelter control, if you make a one per cent gas, one per cent SO_2 , for instance, which is a typical gas concentration, if you have 90 per cent control on the smelter, you would move the decimal over one; you would have 0.1 per cent gas. The gas must reach the ground at less than 0.3 parts per million; so the decimal has to move over six units.

The most you are going to reduce the gas concentration is by, say, 90 per cent via controls in a smelter. The stack diffusion, the dispersion of the gases, must make manifold reductions in the concentration. Even if you had a few tonnes a day, you would still want to discharge the gas at a high elevation to prevent the opportunity for the infrequent but expected high ground-level concentration.

The plume can rise 6,000 feet in the air and come back down relatively undiluted; so you cannot depend on controls alone to ensure that there will not be high levels of SO_2 that hit the ground. A tall stack should be part of any program. A tall stack is not an alternative to controls. You have to reduce the amount of SO_2 and discharge the tail gas in a fashion that will not cause a problem.

When we put in the stack in 1972, at the same time we had also cut the emissions by about 40 per cent. In fact, there was not an increase. It was presumed that when the stack was installed we had simply passed the problem on, as someone said, to North Bay or somewhere downwind.

We were aware that statement would be made. Beginning about 18 months before the stack was built, we began a monitoring program which set out sulphation plates in essentially the four axes, north, south, east and west, extending about 150 miles in all directions. A sulphation plate is a rather simple monitoring tool. It is not very sophisticated; it is a crude indicator of the pollution footprint. Therefore, we ran that for 18 months before the tall stack started and we were able to demonstrate the profile of the plume, where the plume landed and in what concentration. We were able to draw the isopleth or the footprint of the plume.

Therefore, we were able to compare the conditions that obtained prior to the superstack coming into effect and the conditions that prevailed later. In all cases, the concentrations were lower. That is only because there was a lot less SO_2 going out. If we had emitted the same amount of SO_2 and simply improved dispersion, one might have seen elevated concentrations put out, but the combination of improved dispersion and less emission meant that there was simply improved dispersion; there was less SO_2 going out over a broader area. In all instances, there were lower ground-level concentrations, just as you would predict.

Mr. Morin-Strom: Mr. Poirier has a supplementary.

Mr. Poirier: I worked at Environment Canada as a project co-ordinator from 1972 to 1977, and we had a very close relationship. As a matter of fact, the head of our division was the former head of the Canada Centre for Remote Sensing. I seem to recall a famous classical satellite photo of the before and after zone of impact of the new stack. That had to be about four or five years afterwards. I remember the pie-shaped impact area, the wedge-shaped zone of influence, of the former stack and the much larger zone of influence of the new stack. What you are saying is that it was less, but maybe the words we should add to that are "relatively less."

Mr. Ferguson: Of course, it was less. There were no places where the concentration at distances increased. That is what I am saying. People would have assumed with the tall stack that a city such as North Bay, which might not have been exposed to elevated concentrations of SO_2 , would suddenly be exposed to SO_2 from Inco because of improved dispersion, but that was not the case.

Mr. Poirier: It went much further than North Bay.

Mr. Ferguson: No. Actually, there is very little. SO_2 does travel long distances and very little SO_2 is deposited in the immediate area. In fact, I believe Environment Canada and the Ministry of the Environment studies suggest that something in the order of one per cent of the SO_2 emitted is actually deposited within a 100-kilometre radius of the operation.

Mr. Poirier: Is it not a fact that after four or five years that from a satellite shot you can see the zone of impact and the effect of vegetation from a superstack?

Mr. Ferguson: No. You are certainly telling me something I am totally unaware of.

Mr. Poirier: There was a classical photo that was circulated at one time.

Mr. Ferguson: What you are pointing out is a plugged-flow phenomenon. At times in stable air masses, a plume can be seen to travel in plugged-flow fashion. That is, it is not dispersing and disappearing but it can look like a garden hose and pass for many miles.

Mr. Poirier: There was a huge wedge shape that extended much farther than the former wedge shape of the old chimney in a much bigger area into Quebec. Surely you must remember that satellite photo?

Mr. Ferguson: I am not aware and I have been in environment control all my life of any studies that have ever suggested any stack has resulted in higher concentrations at greater distances.

Mr. Poirier: I am not saying there is higher concentration, but where you could see the damage on the vegetation after four or five years in a much wider pie shape.

Mr. Ferguson: Surely you are not suggesting that SO₂ that has travelled 100 or more miles could be found at concentrations that would demonstrate acute damage?

Mr. Poirier: I do not know.

Mr. Ferguson: I have never read that in the literature in my life.

Mr. Poirier: It showed on the satellite photo. Exactly what the damage was, it was enough to photograph it.

Mrs. Marland: Maybe you should bring in the photograph.

Mr. Ferguson: I am not sure that a photograph is--

Mr. Poirier: A satellite shot.

Mr. Ferguson: I know what it is, but I am not sure what that tells you.

Mr. Poirier: That makes two of us.

Mr. Ferguson: I certainly try to keep aware of the literature that reports on damage as measured on the ground. I cannot believe that in the transport of SO₂ from a plume several hundred miles distant there could be any concentration that could result in vegetation damage, because the SO₂ would have to remain at a concentration of at least 0.3 or 0.4 parts a million.

Mr. Poirier: I do not know. That was an infrared shot.

Mr. Chairman: Mr. Poirier, it is a question which you might more properly pose to other witnesses.

Mr. Ferguson: I suggest you ask the Ministry of the Environment experts.

Mr. Chairman: Mr. Poirier, I was going to suggest that you might want to reconsider your preamble when you said, "When I used to work."

Mr. Poirier: For Environment Canada? Yes. I do not work there any more.

Mr. Morin-Strom: You say you did your tests to 150 miles?

Mr. Ferguson: Depending on which direction, because we were limited to the roads, the existing arteries. We went up the Kapuskasing route. We had plots located along the road to North Bay and Ottawa and, of course, we used the Sudbury to Sault Ste. Marie highway, Highway 69 and various arteries, because obviously it would not be practical to be doing this by helicopter. We were limited to existing road structures.

We did this some time ago; it terminated about 1976 or 1977. I think the furthest monitor was 150 miles north. That would be the farthest north sampling site.

Mr. Morin-Strom: What percentage of the emissions fell within the 150 miles?

Mr. Ferguson: I am remembering statements that have been made in studies on acid precipitation. An Ontario study, I believe, suggested that about one per cent of the SO₂ emitted from the Sudbury complex would have been deposited within a 100-kilometre radius.

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Mr. Morin-Strom: Only one per cent?

Mr. Ferguson: Yes.

Mr. Morin-Strom: In other words, the rest was virtually worldwide?

Mr. Ferguson: As one realizes, SO₂ is a long-range-transport phenomenon. That is why nations must come to agreement to protect each other's atmosphere. We are exposed to transport from other nations and other nations are exposed to ours.

Mr. Morin-Strom: How much falls in Ontario?

Mr. Ferguson: I would not be able to answer that. Obviously, that is a calculation.

Mr. Morin-Strom: Just a few per cent presumably?

Mr. Ferguson: There might be a way of answering that question because there were two periods of time when Inco did not operate for extended periods of time. In 1977-78, we were down for some 9.5 months and I believe 1982 to about March 1983, we were down for about 10 months. I hate to use the word "experiment" but that was an interesting period. The ministry could observe the deposition levels in Ontario, if you will, before, during and after Inco's having zero emissions. The Ministry of the Environment in Ontario and Environment Canada both went to a lot of trouble to try to observe, if they could, the changing circumstances in deposition patterns in Ontario; what happens when Inco is not running? That was a unique opportunity.

Having read the reports the ministry published, it would seem there was little change in circumstances. That does not mean to suggest that therefore Inco is not a problem. What it means is we do have an international problem

and if we are going to see air quality altered and a deposition change in Ontario, it is going to have to be an international program, a continental program, to reduce emissions. Obviously, gaseous emissions travel far and wide and Ontario is exposed to emissions from all over North America. If Ontario's air quality is to be improved, North American emissions will have to be reduced.

Mr. Morin-Strom: What you are saying is the big stack not only reduced the emissions in the Sudbury area but also within 150 miles, but that the problem went on a worldwide basis.

Mr. Ferguson: The business about how much SO₂ is deposited locally is not confined to tall stacks. After all, we did have tall stacks before. The nickel smelter stack was 500 feet tall. That was not a short stack. It would be different if gas was emitted at ground level, but the stacks that were there before were also tall stacks.

Mr. Morin-Strom: Algoma Steel is a case where it did not install a tall stack in the 1970s and as a result there is quite a devastated area adjacent to its--

Mr. Ferguson: It is in a unique situation also.

Mr. Morin-Strom: That is right. It is a relatively low population area, particularly where the prevailing winds are taking the emissions there, and there is a devastated area adjacent to the sinter plant. In a case like that, do you think it was wise not to have put in the tall stack? Algoma's problem is a local one.

Mr. Ferguson: I would not comment on what decisions Algoma makes, but I do not think--

Mr. Morin-Strom: I am sure it was an Algoma decision.

Mr. Ferguson: --that regulatory agencies look in favour on tall stacks. I think the first choice a regulatory agency would make would be to reduce emissions. I personally believe that both things are musts. Emissions must be reduced and the tail gases must still be vented through tall stacks, if you are going to avoid local ground level concentration problems. I think there is enough evidence around in literature to support that.

Mr. Aitken: I think that is the significant problem which Falconbridge has today. It has a ground gas problem very close in to its relatively short stack.

Mr. Morin-Strom: I would like to address briefly the issue of whether we can do something in northern Ontario to create jobs out of this issue by, as Mr. Aitken has supported, the concept of producing something out of the sulphur. I wonder why, in your research work and reports, you have not talked about that. It is not a direct solution to the reduction perhaps in the amount of emissions, but getting something of value out of the sulphur that we are removing from the effluent.

Mr. Aitken: I do not think that is a subject that really fits within this regulation, but it is a very valid subject for anyone who is working or living in the north. That is why this fertilizer project surfaces from time to time. Part of the reason it is particularly appropriate now is that when governments are interested in how they can best contribute to resolving the

problem, I think they can perhaps best do that by killing two birds with one stone. Certainly, spend money to clean up the environment, but do it in such a way that you create jobs. That is what the fertilizer project might just do.

We are not experts in that business and one of the things that I have suggested to some of your colleagues is that there is an amount of money sitting out there. I do not know what it is called now. Flora MacDonald was behind establishing something like \$5 million and it was for--

Mr. Morin-Strom: It was one of these community futures programs.

Mr. Aitken: That may be it. That may be the title. I cannot just remember off the top.

Mr. Morin-Strom: I think in the Sault they call it community futures. There may be some other term in Sudbury.

Mr. Aitken: I spent some time promoting the idea that we should spend some of that money on running a good quality feasibility study on this whole exercise, because you need input on phosphate rock mining. You need input on acid production. You need transportation input. You need fertilizer production input. You need marketing input. There are a lot of different disciplines involved in this. I do not think there is any one individual sitting around who has all that expertise. So I was interested in the idea of how we might get our hands on some of that \$5 million, but so far, it has not worked.

Mr. Morin-Strom: I am a little surprised that you have not done anything about it though, directly, seeing that the sulphur is a product of your corporation's operation and presumably you have an opportunity to do something with it.

Mr. Aitken: No. Any one company on its own trying to make this go is on a loser. It is not going to work, and it has been studied enough times. That is why in the end companies like CIL shut down and imported the fertilizer from Florida. There has to be some other element, something to bring it together; a catalyst. That is where I guess I saw government's interest in cleaning up the environment and providing funds to do so as possibly being the catalyst which would make the thing go.

Mr. Morin-Strom: Another possibility, and I wonder if it has ever been explored, is the conversion to elemental sulphur, as occurs in the western provinces as a byproduct of the oil and gas industry. My understanding is there are hundreds of thousands of tons of elemental sulphur being produced by some major operators. I remember the Aquitaine Company of Canada Ltd. in particular used to be big on that. I think they are part of Canada Development Corp. now. I think some of that product may have been used for asphalt or whatever. I do not know exactly what it is used for.

Mr. Aitken: Sure. There are all sorts of things.

Mr. Morin-Strom: Are there any opportunities in terms of elemental sulphur with your operation?

Mr. Aitken: Wait a minute, not with our operation, because you are back into this thing of what does it cost. The elemental sulphur production operations that you are talking about are essential--

Mr. Morin-Strom: It is one of the byproducts from your operation.

Mr. Aitken: No. You are talking about the natural gas fields in Alberta.

Mr. Morin-Strom: Right.

Mr. Aitken: There are many sour gas fields there which contain H_2S . What you do essentially is take some of the heat units from the natural gas and use them to convert that H_2S to elemental sulphur. In some cases, you even end up not with a natural gas well but with a sulphur mine. That is quite different from SO_2 , which does not have this source of energy going along with it--the natural gas--that allows you to make that conversion.

Mr. Ferguson: You are reducing SO_2 to elemental sulphur and the reduction is very expensive. There is no oxygen in the natural gas and the Klaus reaction can be very efficient. The entire process can be economically driven by the elemental sulphur that results. Elemental sulphur in Calgary is sitting at \$125 a ton. The trouble with the SO_2 in smelter gas is there is lots of air, there is a lot of oxygen in it, and it would be grossly expensive. You could not even conceive of trying to reduce low-strength SO_2 gas that has a lot of oxygen in it. There are companies that have built such plants and the plants have shut down immediately and are white elephants right now because it would make it grossly expensive. Again, it is not that there is no technology available. It is that that would be a very expensive process.

1620

If you look at the smelters in the world, whether it be a smelter in Japan, the United States or Canada, the lion's share of SO_2 controls is to oxidize the SO_2 and SO_3 and make acid. The bulk of the controls follow that. On a few unique smelters, such as the Inco smelter and a few others, where you are able to produce high-grade SO_2 , you can also produce liquid SO_2 . That is the lion's share. There are no smelters that are producing elemental sulphur as a basic process to treat smelter gases. There are none in the world.

Mr. Aitken: I think the other thing that should be remembered in this that if you attempted to apply that technology to treating low-strength SO_2 , it would be one of the most wasteful technologies in terms of a very important natural resource--namely, natural gas--because that is what you are doing. You are burning natural gas for no other purpose. You are getting none of the heat benefits out of it or chemical benefits that the chemical industry obtains. It is very wasteful.

Mrs. Grier: One quick question. Has the Ministry of the Environment indicated to you that any kind of environmental assessment process is going to be required before you implement any of these changes in your technology?

Mr. Aitken: There is no mention of any such thing in the regulation. What I would like to say is that if we are going to go through an environmental assessment process, and we have nothing against that in principle, we better make it work more effectively than it does right now because otherwise we will never meet the schedule.

Mrs. Grier: But it has not been indicated to you as yet that that will be a requirement?

Mr. Aitken: No.

Mrs. Marland: "I was tremendously interested in your statement that when you were closed for the 10 months in 1982 and 1983, there was no impact in the overall registration of emissions. Yesterday, Mr. Bradley mentioned to the committee the fact that we contribute 50 per cent and we receive 50 per cent in terms of this overall problem. Going back to your previous shutdown--and I did not catch the year it was.

Mr. Ferguson: It was 1977-78 and 1982-83.

Mrs. Marland: Five years earlier.

Mr. Ferguson: Yes.

Mr. Aitken: It was 1978-79.

Mrs. Marland: Three or four years. Was there any impact when you were closed at that time?

Mr. Ferguson: No. Both periods of time were subject to pretty intensive study by the Ministry of the Environment. You cannot say there is no change because there is so much noise and so much variability in a day that it was impossible to identify a significant change in precipitation. You cannot conclude from that, "Aha. That means that Inco does not affect the air quality in Sudbury." It just shows it is very variable and you really cannot find the smoking gun. You cannot link the point source to the point of impact. That appears to elude science, but it is clear that the Sudbury area and Ontario are affected by emissions obviously far distant from Ontario.

The Ontario Ministry of the Environment and Environment Canada have done an enormous amount of modelling work in an effort to better understand this. Their work concludes that about half of the deposition that falls in Ontario stems from Canadian sources and the other half stems from sources south of the border, which I think is just the best understanding they can reach.

Mrs. Marland: I understand that, but I want to focus on what happened when you were closed for 10 months. That is not a month. It is not three months. It is not really a day-to-day thing. Ten months is a very significant amount of time that you were not operating. If you really are a big contributor and there is no change in 10 months, I think that is a lot.

Mr. Ferguson: No. Let us look at the numbers. If North America emits about 50 million tonnes of SO₂ NO_x and we emit less than one million tonnes, then it is going to be hard to find us. If you put it all together and mix it up in the environment, you are not going to be able to find it. The monitoring is not sophisticated enough to identify a one per cent source.

Mrs. Marland: I see.

Mr. Ferguson: I think that is pretty convincing evidence. Clearly, we must deal with the total North American emissions if we are going to see any long-term change in air quality.

Mr. Aitken: I think Charlie has just put out there a very important statistic and one that is not generally recognized because we are seen to be the biggest. We have the superstack and everyone knows about this, but we represent less than two per cent of the North American emissions.

Mr. Chairman: I would like to thank you, Mr. Aitken and Mr. Ferguson.

Mrs. Marland: I just want to say one thing.

Mr. Chairman: One more thing and then Mr. Aitken is going to say one thing after you.

Mrs. Marland: It is not a question. I just want to say I did not have the same impression as my colleague Mr. Poirier that Inco was negative as opposed to Falconbridge this morning. At least this individual member of the committee wants to say I feel much better at the end of today than I expected to feel from listening to both the companies. I certainly would not want Inco to leave thinking it has given us a negative presentation, but you and I could discuss it later, Mr. Poirier.

Mr. Poirier: I should hope so.

Mr. Aitken: If I may, Mr. Chairman.

Mr. Chairman: Certainly.

Mr. Aitken: I would like to try to clarify one thing in case there was any confusion about this industrial regional development program grant and paying the thing back. In the second report, appendix 1, there is section 6. The relevant pieces are 6.02-A2 and 6.02-B2. It says:

"The applicant shall notify the minister promptly in writing of any transfer to commercial use within its own production capability or otherwise of any prototype, pilot plans or other equipment acquired or manufactured for the purpose of the project and, if so directed by the minister, the applicant shall pay the minister forthwith the greater of 40 per cent of the proceeds of disposition or fair market value of the special equipment."

That is where the transfer into commercial use triggers the repayment of the 40 per cent of the fair market value, which is the extent of the grant.

Mr. Chairman: Obviously, it is something we all have to take a look at very carefully. None of us is understanding it perfectly. I want to thank you again, Mr. Aitken and Mr. Ferguson. We look forward to being up in Sudbury next Wednesday.

Mr. Aitken: Unfortunately, I will not be there. I guess I am lucky enough that next week is my week on vacation. I am looking for something warmer, but I am sure Charlie is going to look after you well. I think you will find it very interesting.

Mr. Chairman: We look forward to seeing you.

Committee members, having mentioned Sudbury, I guess there has been a list sent around to see who is going and not going. If indeed there is a substitution between now and Monday, please let the clerk know. On Tuesday, we will be going to Lakeview to view the Ontario Hydro installation.

Mrs. Marland: In Mississauga South.

Mr. Chairman: Is it a riding close to yours, Mrs. Marland?

We have been advised to advise you that if you would please wear dark clothing on that day, it would be appreciated. Wear darker clothing because if you do not, I suspect it will be darker afterwards.

Mrs. Marland: There is no cleaning bill is what you are saying.

Mr. Chairman: Something like that.

Members of the committee, there was an item from this morning that we had discussed. That was with respect to Mr. Morin-Strom's resolution, which we are going to discuss tomorrow. There is some suggestion that we take another look at what time tomorrow we debate the issue.

Mr. Partington: I mentioned it to Mr. Morin-Strom as well as to you, Mr. Chairman, that I thought it would be appropriate if we discussed the resolution at one o'clock so that we would not have to come in the morning just for this one item. We could then conduct all our affairs tomorrow in one afternoon sitting. I thought that would be more convenient for the committee, for those who may want to attend their riding or who may have other matters to attend to here. It just seems that would be a more efficient way of doing it.

1630

Mr. Chairman: Just before we proceed with that discussion, I should indicate that if we do leave it to 1 p.m., with Ontario Hydro being present tomorrow afternoon and the length of time that I am sure the committee would like to take with Ontario Hydro, we should certainly start at 2 p.m. with Ontario Hydro. Therefore, any discussion we would have with respect to Mr. Morin-Strom's resolution would be finished at two and I would cut it off at that time. As far as I am concerned, it can be either at 10 a.m. or at 1 p.m.

Mrs. Marland: I am flexible as far as the time is concerned and I certainly agree that we have to start at two with Ontario Hydro's presentation, but if we have not finished with this item by two, could we agree that we would continue later in the afternoon? I have no idea at this point whether we would need half an hour or an hour and a half on it.

Mr. Chairman: The problem is we do not know how long Ontario Hydro will take. They may go on longer, beyond four o'clock.

Mr. Wiseman: I have not talked to Peter about this, but perhaps we could start in the morning, then have Hydro at 10 and go through to one, or something like that.

Mr. Chairman: That may be difficult to reschedule at this late date.

Mr. Wiseman: I thought maybe it could be arranged with Hydro being right here. It is not that they have to come a great distance.

Mrs. Grier: Have you had any indication from the minister or officials of the Ministry of the Environment about who is going to be here to discuss the issue with us and when they are available?

Mr. Chairman: We have not had any response from them, and as far as debating the motion is concerned, I do not think we would particularly need them. If they are here, I think they are great as resource people, but as I read the motion, it was requesting them to provide us with copies of the

report. That motion, I suspect, could be debated in any event. I hope they will be here.

Mrs. Grier: If they have got a report and they have received and commented on it, they could make it available to us and we might not need the motion.

Mr. Chairman: Mr. Scott might be able to expand on that.

Mr. Scott: I can shed some light but not provide any answers.

At this time, we are still trying to find out whether we have received a request to review such documentation. It has not been received within any of the senior levels, but we are trying to make certain that it did not come directly to an evaluator or something like that on the basis of some process that was established years ago.

Certainly, our senior people are not aware that we have received a formal request to review this particular application, but by tomorrow morning we will know categorically whether or not one was made by some other means.

Mr. Chairman: We still have to make a decision ourselves then on whether it is 10 a.m. or 1 p.m.

Mr. Morin-Strom: This is an item of business a bit different from the Ontario Hydro presentation. My preference, for several reasons, is that it happen at 10 o'clock, if it is at all possible. The time flexibility is an important one. We may be done in 15 minutes or we may be done in two hours. I do not think it should be disrupted, as you are suggesting, cutting off the debate after one hour. I think the committee may well decide to take other directions than just the resolution that I have. Other amendments or ideas on the issues may come forward. While I have presented a resolution, there may be other things related to it in terms of whether the committee would like to add that to its agenda.

As well, in terms of some of the formalities, I understood Brian Charlton was going to be coming back and substituting for me for the Ontario Hydro presentation. While I would be the committee member for the morning session, I would prefer just to be the committee member for that session and Charlton would be participating in the afternoon sessions. I would like to have a clearer distinction between one or the other in terms of who is a member and who is not for those two sessions. In terms of my getting back to northern Ontario, I would like to be able to get out in the afternoon because I have an early evening appointment. However, if necessary, I will abide by the wishes of the committee.

Mr. Chairman: As far as the matter between Mr. Charlton and yourself for the afternoon is concerned, that is one thing, but the other suggestion you made is a very valid one. You want to get back to your riding.

Mr. G. I. Miller: I suppose I would be in the same position as Mr. Morin-Strom. I can be here in the morning, but I cannot be here in the afternoon. We have already made plans to be here for the morning if we are sitting. It is really immaterial. The debate on the motion could be done in the morning and we could clear up the matter and be clear for the afternoon.

Mr. Chairman: It appears there is a consensus then that we proceed at 10 a.m. tomorrow.

The committee adjourned at 4:35 p.m.

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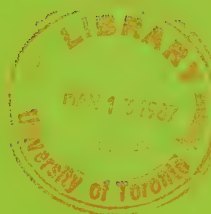
Publications

SELECT COMMITTEE ON THE ENVIRONMENT

TEST FLIGHTS

THURSDAY, FEBRUARY 26, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitutions:

Mancini, R. (Essex South L) for Mr. Knight

Morin-Strom, K. (Sault Ste. Marie NDP) for Mr. Charlton

Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witness:

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office

LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, February 26, 1987

The committee met at 10:09 a.m. in room 151.

TEST FLIGHTS
(continued)

The Vice-Chairman: I will call the committee to order. I see a quorum. The issue we have to deal with this morning is the debate on Mr. Morin-Strom's resolution. Karl, would you like to begin?

Mr. Morin-Strom: I raise this issue before the committee, because I think it very much fits within the terms of reference that were laid out on the day we adjourned, February 12.

The select committee on the environment was authorized to consider bilateral environmental issues as they affect Ontario. While the primary focus of the committee to this point has been the issue of acid rain, I think this is an important environmental issue confronting residents, particularly in northern Ontario, who are concerned about the low-level bomber flights that have been proposed to go across quite a broad area of northern Ontario, starting from North Bay going north up to the vicinity of the Quebec border, around the town of New Liskeard and then crossing over to the area of Lake Superior Provincial Park and Agawa Bay, about half way between Sault Ste. Marie and Wawa, and then heading out over Lake Superior.

This is a issue in which we have B-52s as well as F-111s, very large planes, flying at altitudes of 400 feet to 500 feet over a broad territory in northern Ontario, a situation which I think is going to be quite disruptive to the environment, particularly to any provincial parks. There is one major provincial park in that area. As a result, I think it is an issue that this committee quite rightly should be addressing.

The evidence I have been able to find indicates that for similar tests in the past, ongoing or proposed, there has been a consultation process with the military, both in the United States and the Canadian Department of National Defence, with the provincial governments.

Yesterday I provided to the members of the committee a detailed document from the Department of the Air Force, which laid out on an information package on similar flight paths over two routes. These were both Strategic Air Command flight paths for their bombers with accompanying fighters, one over British Columbia and another route over Alberta, Saskatchewan and the Northwest Territories.

Included within it was discussion of environmental assessment studies that were to be completed. My information is that those studies currently have been commissioned and are nearing completion. They have not been completed, but there is consultation going on with the communities out in British Columbia and the other provinces in western Canada. Those studies, which started late last summer, will be completed within the next month. There is then a process for review by the provincial governments with consultation with the ministries of the environment in those provinces before those routes are approved.

Two weeks ago, it was reported in the press that similar Strategic Air Command flights are now planned over northern Ontario, as I indicated. In fact, pilots have been warned by the Department of Transport to watch out for these flight paths, starting as early as March 8 in one report.

I would hope we could get the Ministry of the Environment to address this issue for Ontario. I have not been able to get good information from the ministry, and although it was promised yesterday that someone would appear before us, I do not see a spokesman here at this point. Is there a spokesman?

The Vice-Chairman: Yes.

Mr. Morin-Strom: I would hope they are able to answer some questions. I do not know whether I should read the resolution. Anyway, the main point of the resolution was recognizing these environmental risks. I asked for three things.

The Vice-Chairman: Let us read it into the record.

Mr. Morin-Strom moves the resolution as follows:

Recognizing the potential environmental risks from the proposed low-level bomber flight testing of B-52s and F-111s over areas of northern Ontario, be it resolved that the committee request the Ministry of the Environment to provide the committee with copies of the internal environmental evaluation prepared by the US Strategic Air Command or any other organizations or government agencies, and copies of provincial responses to these proposed low-level bombing test flights planned over northern Ontario, along with information on consultation between Ontario and the US Air Force, the Department of National Defence and the federal government.

The Vice-Chairman: Mr. Partington, do you want to make a comment before we bring Mr. Scott from the Ministry of the Environment?

Mr. Partington: Just as an opening comment, to some extent, I disagree with Mr. Morin-Strom that the subject matter of his resolution is relevant to the proceedings. Although he originally indicated that we would be exploring bilateral--

The Vice-Chairman: You have to be careful to speak into the microphone.

Mr. Partington: Although the original purpose was described in general as bilateral environmental concerns, clearly the agenda that was struck, particularly with some lead and guidance from Mrs. Grier, was that we would be talking specifically about the Acid Rain Countdown program of the provincial government. When we completed a review of that, we would then go, in order of importance, to two or three other areas, including toxic waste in the Niagara River, toxic acid rain and, I think, water quality of the Great Lakes. So it seems to me that to get in a study of airplane flights over Ontario is really out of order and should not really be considered until the end of these hearings. Perhaps at the end of these hearings, if there is time, we could go into it.

Second, as I look at some initial material that was submitted with the resolution as background, if you look at the environment, the short paragraph states that the primary concern with the proposed aircraft overflights are noise-related disturbances to wildlife and people. It does not even mention

that. It says other potential environmental and socioeconomic concerns will be identified. It is broad. It seems to me the resolution is out of order. It is not within the ambit of the committee to deal with that until we have finished with what we are set about here; that is, Acid Rain Countdown.

There are all kinds of very important environmental issues that we could bring up every day and say, "Let us deal with them." It seems to me we have struck a program. We did it because it is important that we keep our minds focused on this one very important issue. Once you start going off on tangents, you lose the focus on what we are here to do. For that reason, I would be opposed to Mr. Morin-Strom's resolution.

Mrs. Marland: Yesterday, we discussed the relevance of the height of the Inco stack and subsequently what happens to the plume when it leaves that stack, so we were certainly within the purview of the committee yesterday discussing acid rain and talking about air movement.

I am not sure whether Mr. Morin-Strom's resolution before this committee affects the movement of air because I do not know the number of flights. I know the type of aircraft. I know the B-52 is the largest bomber made in the world. I do not know the number of flights or the number of aircraft. I recognize an F-111 is perhaps the second-fastest or third-fastest jet fighter that is available at the moment, but until I hear from the Ministry of the Environment staff, whom I hope have the details of the number of flights and the number of aircraft, I am not in a position to comment as to whether this is relevant to the subject of acid rain.

However, I would humbly and respectfully suggest that if it is a heavy concentration of aircraft and it is a heavy concentration of flights, it stands to reason that it also involves the stirring up and the movement of air. When you see that it is suggested that it is over the north of North Bay, and we do not even have the details of the flight paths, we will know if those flight paths might go right through the prevailing route of the plumes as they leave the Sudbury area. Without further information, which I hope we will have from the Ministry of the Environment, I feel as one member of this committee that I have an obligation to at least listen to what the ministry has to say; then I am in a position as far as possible to judge whether it is necessary for us to do any more.

Frankly, I see Mr. Morin-Strom's resolution as simply being that. It is asking for more information. If it is more information that becomes relative to the subject of acid rain then it is within the purview of this committee.

1020

Mr. Poirier: I agree with both of these enunciations, but I think you mentioned yesterday there was an urgency to that resolution in the sense that they are planning to do that on what, March 8?

Mr. Morin-Strom: According to the report, it is a starting date of March 8 for these flights. That is correct.

Mr. Poirier: International Women's Day, yes, on March 8. If that is the case and we do not have any idea of the intensity, the number and whatever, I think we should, unfortunately, sit down and look at that now because there is enough of an importance. I would not want to see March 8 go by and find out that we are going to have a parade up north and we would have had a chance to look at it before but missed out on that opportunity, so I

agree with you. As an exceptional measure, we should put aside the discussion of the potential damage of acid rain and look at this resolution.

The Vice-Chairman: Again, our committee plans worked out that we did have a free morning this morning, so it does give us an opportunity. It is a matter of the decision of the--

Mr. Partington: My focus is, so long as it is just confined to acid rain and not to any other aspects of that private--

Mr. Poirier: But if we are an environment committee and if the damage is going to be something other than acid rain, I do not know what it might be, but I think we should look at it. It might affect acid rain. It might be something very serious. I do not know, and I would hate to miss out on that if we did not know that before the plan.

Mrs. Grier: I think we need to perhaps clarify that last point. I certainly, in supporting this resolution, do not see it as being directly tied to acid rain. It may well be one aspect of it, but it is an environmental issue. While I agree with Mr. Partington, this committee in its initial organization looked at a whole number of environmental issues that affected both countries and decided that as a first step we would examine acid rain. That does not preclude us from deciding that priorities have changed and that something else has occurred in the interim that we want to examine.

I think we have to be conscious that the resolution before us today is not suggesting essentially that we set aside other business; it is merely asking the ministry to provide us with the information. I would hope that we would all support that recommendation. When we get the information and see the magnitude of the problem then would be the time to decide where in our priorities it fits and, given the urgency and the date of March 8, whether we want to set aside our acid rain discussions and deal with this one.

I would hope members of the committee would have no problem in supporting this resolution as an initial step to at least find out what is going on in the air space over this province.

The Vice-Chairman: Could we have Mr. Scott from the Ministry of the Environment give us an update on what is happening?

Mr. Scott: As I indicated late yesterday afternoon, we have taken a look at all our records of materials that had been received by the ministry and have not found any packages received from either our Canadian federal government or the US government providing any information about the flight path proposals.

Since the time I spoke to you, we also have made contact with the staff at various ministry offices, our regional offices that are involved and within our various approvals offices and other offices, and have not found anyone who has that information at this time.

I can now provide you with everything we have got, which is nothing.

Mrs. Marland: Did you call the federal government?

Mr. Scott: We have only looked internally because I thought, based upon what I heard from the recommendations, we were to bring all of our reports and copies of their reports with us this morning. We were more than

willing to do that, but we just do not have any of the other reports. If it is the committee's wish for us to go and gather information from other agencies--

Mrs. Marland: When you found you had not heard anything, I would have assumed that someone would have called the federal government, especially the Department of National Defence, to ask as simple a question as whether the flights are even taking place, since you had not heard anything at all.

Mr. Scott: We are certainly prepared to do that, but within the time frame between the end of yesterday afternoon, when your session finished, and this morning, we have been looking to see if we have the documents internally.

Mrs. Marland: With respect, we decided at 10 o'clock yesterday morning that we would deal with this. Certainly we had decided by 10:30 yesterday morning that we would deal with this resolution today. I would have thought that one call to Ottawa to find out whether the flights are even taking place would have been made. That would have been one call. I appreciate that you called all the regional offices of our provincial Ministry of the Environment, but to deal with the fact would have required one call to confirm whether we need the resolution even in its proposed state.

Anyway, perhaps you do not have enough staff to have called Ottawa during the day. I would have called myself had I had time yesterday, because one thing I wondered about was how sure we were that the flights were going to take place and even, especially, their timing. In any case, I did not have time yesterday because I was sitting in the committee all day.

Mr. Wiseman: In view of the fact that we do not have this information and that it looks like next Tuesday afternoon we will be back here at 1:30 by our schedule, I wonder if that would not give the Ministry of the Environment time to check with the Ottawa people and so on, and we could deal with it more fully next Tuesday afternoon. It looks as if we do have a free afternoon there. We are all here anyway for that tour in the morning. It would give the Ministry of the Environment time to put things together, to check with the federal government or to come back in and tell us that this is not happening.

Mr. Morin-Strom: I would like to support the recommendation of Mr. Wiseman that we leave open a session for Tuesday afternoon and that we ask the Ministry of the Environment to collect all the information it can on this issue from outside sources, including the information on the flights which I understand has been distributed to pilots, at least, by the Department of Transport. It is my understanding that it is out in the public--at least a limited portion of the public--in some form, although I have not seen it.

While officials are collecting information from the federal government, they might at the same time look at getting information on the studies currently going on in Labrador and the studies currently under way in western Canada, which are being conducted by an environmental studies firm in Vancouver. The ministry might contact them to get information on the environmental assessments of proposed low-level bomber routes in western Canada. As well, the ministry might contact the Michigan Department of Natural Resources, which, as I understand it, has also expressed concern over and done some study into environmental effects of low-level flights over park areas and state forests in the state of Michigan.

I think there are sources of information on this type of activity. The Ontario government should be playing a part in that. Perhaps the Ministry of

the Environment can come back with recommendations on how Ontario and perhaps the federal government should proceed to ensure there is a full environmental assessment or evaluation of the routes in northern Ontario.

1030

Mr. Wiseman: I was not figuring on getting all these reports by Tuesday and having the Ministry of the Environment come in with some suggestions. It seems odd that the provincial Ministry of the Environment does not know anything about something like this going on. I think we are putting the cart before the horse. We have to find out if there are a number of flights, how frequently they are, if they are taking place at all, and have the ministry come in and tell us on Tuesday. Then, if we want to go the other routes of getting into all those other studies and one thing and another, I think that is down the pike a bit.

Perhaps the Ministry of the Environment cannot pull all that together and give us a report by Tuesday afternoon. We may be asking them for the impossible, but I think they could put together how many flights there are, whether they are taking place and any concerns the federal government, the Ministry of the Environment or whoever may have. If we think it is important enough, we then map out our strategy as to where we want to go from there, but not ask them to do all this work at this time.

Mr. Morin-Strom: May I make a quick comment? I am not sure how much can be accomplished by next Tuesday, but perhaps more can be accomplished than just asking the federal government whether the flights are occurring. If the flights are not occurring, perhaps none of this has any meaning for Ontario. That is correct, and it may not be a difficult task at all to determine whether the flights are occurring.

If they are, then I think supplementary information does not necessarily have to mean the copies of the completed reports but a status report on what has been happening in some of the other jurisdictions. They can make some preliminary contacts and let us know.

Mr. Wiseman: I would see that as coming later on after the committee--

Mr. Morin-Strom: There is some urgency here.

The Vice-Chairman: I want to make a point of clarification. We do have a copy from the Department of the Air Force, dated December 2, 1986: "Copies of information packages for two proposed low-level military flight operations routes in Canada. The information package was prepared by our office, the US Strategic Air Command (SAC), Offutt AFB, Nebraska, with information furnished by the North American Aerospace Defence Command, Peterson AFB, Colorado, and National Defence headquarters, Ottawa, Ontario."

These copies were sent to us and they involved Alberta, Saskatchewan and the Northwest Territories. That information was made available to those provinces. I think that is maybe one of the issues. There does not seem to be any contact point for Ottawa, the American defence department and Ontario.

I am not sure whether it should be the Ministry of the Environment or what ministry should be the liaison to make sure we are informed. That is a question that bothers me. We have zeroed in on Environment because we are dealing with environmental issues at present before this committee. It may come to the surface how this should be dealt with. I think it is a new venture and a new relationship between the federal, Ontario and American governments.

Mrs. Marland: That document to which you have just referred from the Department of the Air Force in Nebraska also refers to the fact that with their procedure out west, they send copies of their draft proposals to the Department of Indian Affairs and Northern Development in Yellowknife, Alberta Environment in Edmonton, the Saskatchewan Department of the Environment in Regina, the government of the Northwest Territories Ministry of Renewable Resources, and, of course, Environment Canada, Edmonton.

What is interesting about this package from the Department of Defense, United States of America, is that they have done this in the west. The question has to be twofold: One, if they have done it and if they are proposing a similar kind of operation over Ontario, why does it not include our ministry? A second question I would have thought was automatic would be that the Department of the Environment would have had a feedback system to us.

On the subject of the notice to pilots, there is a system in the Department of Transport whereby it issues what are called NOTAMs, which are notices to airmen. It is a little sexist, I must admit, but that is what they are called. NOTAMs are posted at all airports prior to an event taking place. If we wanted to find out the frequency of those flights and what areas have been secured for this training flight, we perhaps could get them. I have not received my copy of the NOTAM, so I do not know what the answer is to that at this point. It would be very easy to phone any government-operated airport, and it will tell us what the NOTAM the Department of Transport has issued says.

I notice on one of the press releases we have here, which is the Globe and Mail of February 13, the headline is "US Low-Level Military Flights Will Be Resumed Over Ontario." That in itself is interesting, because they are saying the flights are being resumed. It is going to be really interesting if they have already taken place and we do not know about it.

Mr. Scott: They may have taken place. They started those flights many years ago, and it may be a training group that has been reactivated after some years of inactivity.

Mrs. Marland: It is possible. They talk about the extension of the time to up to three hours.

As a member of this committee, in any discussion on this subject, I would like to disassociate myself from another headline which says that the US air force training flights in Canada drew a protest from peace activists. My concern in this matter of Mr. Morin-Strom's resolution is totally environmental.

I have no difficulty with high-level training flights by US Air Force military contingencies taking place over Canada, because if we were to get into that terrible situation where we were to be at war, we have a Canadian military air force but we would be dependent on the US to defend us. I do not want to be considered as a peacenik on this whole subject by saying they cannot do their low-level flights.

Interjection: Nobody said that.

Mrs. Marland: I am in favour of sharing the responsibility of allowing flights over Canada. My concern is that when we are talking about tree-top level to 400 feet and 450 feet, we may be talking about a severe risk, at least to wildlife, and possibly to the acid rain situation as well.

It is a very important resolution and it is a situation where we need to

get the reports back. It is going to be very interesting to find out what the Ministry of the Environment has done in the past about these flights. If this is not the initial testing at this low level, there must have been decisions made previously. Obviously, there have been decisions made by both levels of government.

As long as everybody, especially the people responsible for giving the permission, knows about these training flights, is aware of them and has investigated whether there is any risk to anyone, I do not see any problem with their being permitted. But we have to have all the facts. Unfortunately, my concern about being here this morning and perhaps not even having it confirmed that they are going to take place means that not only have we--by the time we get to Tuesday, that is already March 3.

We are five days away from the date we heard the flights were to take place, so I think we should contact our federal colleagues and ask that there be some automatic system of informing the province involved, no matter whether it is Ontario or any other province in Canada.

1040

The Vice-Chairman: Our researcher can get some background information on that, if we so desire and if we would like to have that looked into. The information given by the Minister of the Environment (Mr. Bradley) indicates, up to this time at least, that we have not been involved in the discussions. That information does not seem to be available. Mr. Scott, do you want to make a comment on that for clarification on behalf of the ministry?

Mr. Scott: I would like to clarify that I was responding to the resolution which asked us to bring forward information about the proposal to reactivate, if that is the term, that air route. The information I have is that the proposal is not currently under review. We have received no copies of any reports about it. There may be information about a review many years ago, but I have no information about whether it was reviewed 10 or 20 years ago.

Mr. Poirier: Obviously, the main part of the responsibility belongs to the federal government. I say the main part, because I found out that usually the federal policy is to submit to the provincial government any environmental impact studies of such projects. I do not think this has been done so far.

From what I have been able to find out, apparently these flight plans have been going over Ontario for the last 17 years, but the corridor has not been used for the past two years. I have been told that the Ministry of Natural Resources asked for more information about the flight charts, plans, frequency, type of aircraft and whatever, but does not have that information yet.

What disturbs me is that if this has been going on for the past 17 years, where has the provincial government been and where has the federal responsibility to provide that information to the provincial government been? You can only respond if you know about it. If you do not and it is top secret or whatever the heck it is, then you cannot react to it.

I know for a fact that MNR is looking into it. Once we get the answers, I think we will have a very close look at it. This is a new dossier, a new development for us in that sense, because of the nature of the projects, the way they were done and the way the government proceeded to do it.

When I look on the second page of that package you mentioned, Mr. Chairman, it only concerns the west and northern Canada; it does not include Ontario on the list, at least on the second page. That Ontario will be included in the flight plans and schedules is news. It was not part of that package, from what I can gather by just looking at it. Once it comes forward, we are not going to sit on it; it will be brought and looked at.

Mr. Partington: I will ask Mr. Scott a question with respect to acid rain and this flight. This is the first reference I have heard saying there may be a link between low-flying aircraft and acid rain. Are there any studies existing in the Ministry of the Environment with respect to this issue?

Mr. Scott: No.

Mr. Partington: If not, why not, given that flights have been going on for 17 years?

Mr. Scott: It is not an area that we have documented and considered to be a major source of SO₂ emissions or NO_x emissions that must be controlled. I guess the problems that will be associated with the corridor will be the same as the problems associated with emissions from all piston-driven aircraft.

Mr. Partington: There is some suggestion that draught from the airplanes will interfere with air flow over time. Is that a problem? Do you see that as a problem?

Mr. Scott: I do not think it will amount to a problem at all.

Mr. Partington: The ministry has not decided to investigate it, at least to your extent?

Mr. Scott: No.

Mr. Morin-Strom: I think the need for the environmental studies and impact assessment is there whether the route is a brand-new one or the reactivation of a route that may have been approved quite a while ago. I have heard since yesterday that some route across northern Ontario, whether it is an identical one or a similar one, was approved, apparently, back in the late 1960s. Apparently it was used very infrequently. Even to me, coming from the area where it was supposed to have taken place, there is little knowledge of these flights actually having taken place, so it would be interesting to know when, in fact, the flights took place, and how frequently they may have in the past and when the last one was previous to this point.

However, on the reactivation of routes, I think we need a reassessment regardless. In fact, in the last couple of weeks I have had to speak to the assistant state forester in Michigan's Department of Natural Resources, who indicates that in the US, they have a number of air corridors which have been dormant for numbers of years and the US military has in recent years been reactivating them for its test patterns. In those cases, they are consulting with the state governments on those routes. They are notifying that those routes are going to be used and asking for comments, and the state is having some impact on adjusting the routes, based on concerns it may have.

I think there is a very valid point being made here, regardless of whether flights may have occurred some time in the 1970s or whenever, to address this issue currently. It is one that is being addressed in other

jurisdictions. I think the people of northern Ontario would like to see this addressed as soon as possible and in advance of these flights actually taking place.

The Vice-Chairman: Is there any further discussion? What direction do you want to go? Do you want to have the Ministry of the Environment take a further look and provide the committee with more information, and maybe also have our research review the background and report back to the committee next week?

Mr. Morin-Strom: Did you suggest Tuesday afternoon might be available?

The Vice-Chairman: That day was suggested. I am not sure--

Mr. Morin-Strom: Was it Mr. Wiseman who suggested Tuesday?

Mr. Wiseman: It looks as if we have a free afternoon that day, so if everything could be pulled together by then--

The Vice-Chairman: We travel to Lakeview on Tuesday morning and return to the Legislature building at approximately 1:30. Would that give enough time for the ministry and our research people to bring information back to the committee, and we will deal with it at that time?

Mrs. Grier: Could we be clear about what you are expecting of both the ministry and the research staff? I think the resolution presumes that the Ministry of the Environment has received something. In view of the information that it has not as yet received something, I would certainly like to see the ministry take responsibility for finding out what other ministries have been notified.

If we have made a mistake in saying the Ministry of the Environment has responded and, in fact, the Ministry of Natural Resources has, I would like the Ministry of the Environment to discover that for us, rather than send our researcher, who is dealing primarily with our own acid rain thing, off in all directions looking for whatever might be available. I think the Ministry of the Environment ought to have been aware of it and ought to have made itself aware of it if it was not informed. I would like to see it track down what is known in the province about these flights and what kind of submission has been made.

Mr. Poirier: Assuming excellent co-operation from the federal government as to giving what we are asking for--assuming that.

The Vice-Chairman: Mr. Scott, do you want to make any comments on the suggestions coming from our committee members?

Mr. Scott: I think Mr. Poirier has raised a very important point. It is one thing to attempt to set out on Friday and Monday and Tuesday morning to assemble all this information, but another thing to presume we are going to find the right people in place in Ottawa to be able to dig out from those dead file boxes, wherever they are stored in Ottawa or in Ontario, information about approvals or reviews that took place 17 years ago; to summarize that information; to approach the US government, the US military; and assemble all that information and put it all together in a package so that the committee will have all the facts before them. We will try, but there are a lot of things that have to fall into place and have to be right for us to present it.

Mr. Wiseman: Perhaps, Mr. Scott, I know there are limitations as to what you can do as an individual; but your minister talking to the federal minister--I think if you get bogged down and cannot get that information that is the time you use your minister. When I was the minister they often did that with me. I have heard the Minister of the Environment (Mr. Bradley) say he would do everything he could to assist the committee. Perhaps you could get hold of him and have him talk to the Minister of Natural Resources (Mr. Kerrio) or whomever it might be, and get that information for us. I do not think the kind of information I am looking for is going to take too long to get. The detailed information from the other provinces may take a little longer.

Mr. Scott: Yes. Certainly all I can undertake on behalf of the ministry, and the minister as well, is to assemble what information we can have available by Tuesday afternoon.

The western consultant who was mentioned may not be prepared to give up information before the report is finalized because he works for another agency. There may be people away who have part of the picture. We can only do our best and report back to the committee on what we have done.

I might suggest that most of the answers to your questions do not reside within the Ministry of the Environment, they reside within the federal government, within the Canadian and American military. We cannot answer questions about height of flights, nature of flights, fuel mixes, frequency of flights, and all of that. All we can do is report back to you what other people have told us. We do not know anything about the accuracy or validity of their comments or data.

What I am suggesting is that if the committee is really interested in knowing the answers to those questions they reside within the federal government, within the Canadian military, who have access to the American military information. Perhaps you may wish to consider the possibilities of having those people come and provide you with the facts as opposed to a secondhand or thirdhand summation of factual information.

Mr. Neufeld: I would like to say that I would also endeavour to use my various channels to try and complement any work that the ministry will try to gather, particularly to try and get information on any work that the federal government has done in this area for Tuesday.

Mrs. Marland: The reality of those flights is not going to be found in any dead file box. There is not a single flight of any type, whether it is civilian, commercial or military that is not approved, especially by the Department of National Defence, and by the Department of Transport. So it will not be difficult to get the information. There is no way that a US air force F-111 or a B-52 is going to be flying over Canada without everybody knowing about it, and having prior permission.

It is very specific. If Michael Tenzsen in the Globe and Mail can tell us some of the routes and that it is perhaps as many as five flights a day, my goodness, I would hope that we have provincial ministry staff who have access. I recognize that it may not be within Mr. Scott's area of purview, but we have a Ministry of Transportation and Communications as well. I do not see there should be any difficulty in getting the information.

If the flights are going to take place, the approvals will now have been given. Our question would be why have we not been involved in those approvals. I cannot see any reason why it would be difficult to get that information from the federal government. On a staff level--right now it is Thursday morning--we should know by the end of this afternoon if our staff, either our researcher or the ministry staff, are facing frustration. In that case, we should then immediately jump it to the political level and cut away the nonsense. But there is no possibility that, if those flights are scheduled for March 8, the altitudes and the corridors are not very precisely known. When we have that information, it can certainly be related to whether it is an issue for this committee. It would be rather surprising, I would think, if we find out that there has not been some comment somewhere about all aspects of those flights. I respectfully suggest that all aspects of any manoeuvre like that have to be considered, not the least of which is the integration of those flights at that level with general civil aviation flights which are in the area. That is where you come into these notices to airmen, because they are scheduled, because there is a reason for it.

The Vice-Chairman: The resolution clearly indicates that members of the committee may, "request the Ministry of the Environment to provide the committee with copies of the internal environmental evaluation prepared by the US Strategic Air Command and copies of the provincial responses to the proposed low-level bombing test flights planned over northern Ontario, along with information on the consultation between Ontario, the US air force, the Department of National Defence and the federal government."

That is the way the resolution reads. It appears that there has not been discussion between the ministry and it was only brought in yesterday and I think the ministry has responded again this morning. We do meet on Tuesday. I do not know if you want to make any amendments to the resolution to add anything further, but I think that definitely instructs the ministry to carry out and report back to us.

Mr. Poirier: When I look at your resolution I find it limiting in the sense that with the provincial government, the way I have been told that the Ministry of Natural Resources has already officially asked for all information, we are just not going to leave it at that. Whatever information, even if the Canadian federal government made some studies--I am interested in looking at that also--any study that might give us some information as to what is happening up in northern Ontario. Since everybody else seems to have it I would like the provincial government to have it, also.

Mrs. Grier: Can you suggest a wording? Do we need a wording?

Mr. Poirier: We do not need to change it. I am just saying you do not have to worry. Whatever information we can get our hands on that is going to be submitted is going to come forward and we will have a look at it. I just wanted to say that there might be some federal studies. Who knows?

Mr. Morin-Strom: Should we be asking that not only the Ministry of the Environment but also the Ministry of Natural Resources appear before us, and perhaps the Ministry of Transportation and Communications? I do not know if they have the responsibility and the better contacts with air routes.

Mr. Poirier: All I think we can say is that we as a provincial government want to get all the information, no matter where it is, no matter what it is, how old it is, whether it is a 17-year old document or a 17-day old document, we are going to ask for as much of the information as possible.

Whatever it is, wherever it comes from--US via the federal, the federal or whatever--we will have a look at that. So do not worry about that. Whatever the resolution says, we will go and get it.

The Vice-Chairman: The only other comment I would like to make as chairman is that the select committee's exact purpose is to deal with the environmental and acid rain issues. We always have to keep that in mind. We do not want to build this into a special investigation on this issue, because that is not the mandate of this committee. I think we have to be careful there, that it does not get out of control on us. But I believe that is an issue that really needs to be clarified as far as the province is concerned and we, the ministry, and all ministers I am sure, are attempting to do that. Mr. Scott, I would hope that you would discuss it with the other ministers who have been mentioned here so that we can co-ordinate. Is that a possibility?

Mr. Scott: I think what I am picking up here from the discussion is that you want us to obtain from the federal government all of the information that we can about these flights and bring it to you on Tuesday. We can do that with no difficulty.

The next part, though, and I have heard this in some of the discussions but it is not always picked up, is whether you want us to be able to answer questions about why the military is doing certain things, or why the Canadian military or the US military are flying at certain heights and the details about it. I do not think that we really will be in a position to address those issues. As provincial government employees, we cannot really speak for those other agencies. Beyond that, we can find and collect the information where it exists and bring it back to the committee for it to consider as information.

1100

The Vice-Chairman: One more point that should be made to you is that other provinces and other parts of Canada are being informed. They have been encouraged, when these long-range plans are made--Ontario does not appear to be, and we must be careful because there could be some old agreements we are not aware of. That paragraph says they are being kept informed about the carrying out of these exercises. I think we rightfully should be informed, not only in order to protect our environment but also because of safety factors at airports and other flight information to the private people.

From reading the information package here, I believe that has been carried out, and in Ontario also, but I do not believe we are aware of that. It appears that way at least. I do not know whether the committee members--Mr. Morin-Strom?

Mr. Morin-Strom: I think what you are getting at is that we want not only the facts on what studies may have been done and what the routes are technically and geographically, but also to know something about the process.

There are some real concerns about the process of notification and evaluation and assessment of what the risks might be and what the notification is of the provincial government versus what appears to be happening in other jurisdictions. Perhaps we want some answers in terms of what process has gone on here, and if we can get any information, what process may have occurred in other jurisdictions for comparison. I have laid out several examples for comparison.

Mr. Partington: I want to say again--I said it at the beginning and

it is still a concern of mine--that we are dealing with Countdown Acid Raid and our review of it. It sounds to me, in listening to the comments of Mr. Morin-Strom, that we want to do a complete review of air flights that are going on in Ontario.

I think you want to narrow that strictly to the effect on the environment. It might be nice to get into all this, but it seems to me it is a study that could take weeks and may already have been done by somebody else.

Mr. Morin-Strom: Environment is pretty broad.

Mr. Partington: Okay. My concern is that we stick to our agenda, which is a review of Countdown Acid Rain. I am very surprised that we are providing a focus of probably one fifteenth of our time discussing acid rain when Environment does not even consider these flights to be a major contributor to acid rain. If it did, it should be in there with Inco, Algoma and the others.

I just want to caution the committee that it is fine to receive some reports, but I think we should be putting it into perspective. If it is an important matter, maybe it is something we should set aside a week or two or three weeks to review at the next stage and reconsider the priorities we established before.

I agree we should look at some reports on the environment, but I do not think this committee should get into a tremendous critical analysis of the whole process of the flights of these bombers or airplanes over Canada and the process of it happening.

Mr. Morin-Strom: I do not think we can focus this solely on acid rain. This is a broader subject than acid rain. Environment is much broader than simply acid rain. As an illustration, if these flights are, in fact, going over Lake Superior Provincial Park, that is a very important issue that has to be addressed by the Ministry of the Environment and the Ministry of Natural Resources, which is responsible for that park.

I have spoken to the consultant who is conducting the study in British Columbia, and he has indicated to me that it would be absolutely forbidden for a route like this to go over a national park and that exactly the same thing should apply to a provincial park. We have to know whether that is occurring, and if that is occurring, if that is what is planned, we have to take issue with that potential occurrence.

Whether it is an acid rain risk, a noise pollution risk or a risk of a crash, in my view, it is an inappropriate activity to go over a provincial park. Some of the other members may disagree. They may think it is appropriate to have low-level flights over a provincial park. If they do, we can get into that discussion, but there are some other aspects, besides strictly the acid rain one, that are within the purview of this committee and that I would like to see focused on.

Mr. Partington: I do not disagree that we should know all the effects of these airplane flights on the environment. The fact is that we have 15 or 16 days to review Countdown Acid Rain.

If you are as concerned as you indicate--and I believe you are--about the effects on the environment, on wildlife and on whatever aspect of our environment, then clearly it is something about which the committee should

consider doing a major review. I do not think what is going to come up on Tuesday is going to enable this committee to interfere with whether these flights take place.

If this is a major issue and Ontario has not been getting proper information or has not been getting a reasonable input--

Mr. Poirier: Or any information.

Mr. Partington: --or any input, then that is something that this committee, or an appropriate committee, should review and hear evidence on.

We are dealing with acid rain, and that should continue to be the focus. We do not have a lot of time. The matter you raise is probably of sufficient importance that we should set aside some time to give it proper review and proper focus. To that extent, the concept of receiving material and going into this broad review is probably out of order at present.

Mrs. Marland: This brief from the US Air Force actually states that the routes are studied for environmental impacts. I do not think it is going to take us very long to know whether environmental impacts include acid rain. That is going to be very simple.

If the routes are studied for environmental impact, obviously there is a concern with the flights. They would not study the routes for environmental impact if there was no concern with the flights, so in their best experience, I guess there has been concern. Obviously, if the routes have to be studied, it means there has been an environmental impact in the past. Otherwise, why would they study it?

All we have to decide is whether acid rain is included in that environmental impact at this time. If it is, we deal with it in the next three weeks. If it is not, we deal with it in whatever chronology the committee establishes. We all share the concern that Mr. Morin-Strom has expressed. If there is an environmental impact, we are concerned, but we do have to establish the chronology of how we deal with it.

Mr. Poirier: Next Tuesday, we hope to have enough information to make a decision. Let us look at it then. If we can see that it has something related to acid rain, let us look at it now. If not, I am sure that any B-52 flying at a low-level altitude over somewhere in northern Ontario, possibly even a provincial park, has something to interest the provincial government somehow.

Whether we are talking about acid rain, scaring the heck out of some moose somewhere, or people, whatever, it does not matter. We will definitely look at that. At one point or another, some committee is going to look it over.

The Vice-Chairman: We have had a good discussion on the resolution this morning. Are we satisfied with the final outcome, that we have as much information made available to us as possible on Tuesday?

Mrs. Marland: I have to share one thing with you. In this report, it talks about how the pilots conduct the flights. I have to share this. It says, "A constant visual outlook is kept for other aircraft and birds." When you are flying at 580 miles an hour, I would like to know how you see the birds.

Mr. Poirier: Close up.

The Vice-Chairman: You use your computer, do you not?

Mr. Mancini: That is what the radar is for.

The Vice-Chairman: If the committee is satisfied with the discussion we have had and the direction we are going, we will adjourn.

Mr. Morin-Strom: I do not think there is a consensus.

The Vice-Chairman: Okay. We will adjourn till two o'clock this afternoon.

The committee recessed at 11:09 a.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, FEBRUARY 26, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitution:

Mancini, R. (Essex South L) for Mr. Knight

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From Ontario Hydro:

Campbell, T., Chairman

Hill, A., Director, System Planning Division

Walters, R. J., Director, Thermal and Hydraulic Generation Division

Holt, A. R., Director, Fuels Division

Taborek, R. J., Co-ordinator, Acid Gas Control Program

LEGISLATIVE ASSEMBLY OF ONTARIO

- STANDING COMMITTEE ON THE ENVIRONMENT

Thursday, February 26, 1987

The committee resumed at 2:05 p.m. in room 151.

ACID RAIN
(continued)

Mr. Chairman: This afternoon. I would like to welcome Tom Campbell, chairman of Ontario Hydro, and his associates. Just before we get into this afternoon's proceedings, I would like to apologize for not being able to be here this morning. I was delayed in a cable television presentation I had to do for my riding. It was not as important as this morning's proceedings, but certainly it was important that I be there.

Committee members, we have only approximately two hours for Ontario Hydro's presentation this afternoon and, in that I am sure there will be a considerable amount of detail that Hydro would like to present to us, I would ask the committee members to perhaps hold questions they might have on separate points of clarification until the end of the presentation. We might be able to get into being able to ask questions at approximately 3:15 p.m. I might mention that to the deputants, too.

Mr. Campbell, welcome and I would turn the proceedings over to you. Would you introduce your associates?

ONTARIO HYDRO

Mr. Campbell: Thank you, Mr. Chairmen. I have with me today, on my right, Art Hill, our director of system planning, on my left, Ron Taborek, co-ordinator of our acid gas control program, and on my far right, Joe Walters, who is director, thermal and hydraulic generation.

Also we have coming this afternoon Al Holt, who is the director of our fuels division.

Our staff have a couple of presentations to make, but I have a few opening remarks that I hope will set the background for some of the discussion today. First of all, we are pleased to appear before your select committee. As we are dedicated to public service, we are very aware of our responsibility to the public.

Our chief responsibility involves furnishing the people and commerce of Ontario with reliable electricity at the lowest long-term cost, but it also involves responding to people's concerns about the environment and how electricity is produced.

The people of Ontario, acting through their government, have made it clear they want a cleaner environment. There is no question about that. The government has taken a number of steps to achieve this, including regulations in 1981 and again in 1985 which required significant reductions in acid rain emissions starting in 1986. The target established by this legislation is to bring emissions from Ontario Hydro down to a level of 215,000 tonnes by 1994. Meeting this target is an important component of our planning and operating policy.

We are very happy to be here and talk about that today. We think we can make a major contribution to Ontario's targets for reducing acid rain. In 1986, the acid gas from our coal-burning stations was below the ceiling established by the regulation. Emissions in 1986 were down 19 per cent from 1985, a 19 per cent improvement, and 37 per cent for 1984.

We achieved the goal the government set for us and we did so while increasing our production of electricity. The peak use of electricity grew by over 1,700 megawatts from 1984 to 1986. That is, during the last two years the peak has grown by approximately the equivalent of two Darlington units. Our growth in one year is about equal to the energy required by a city the size of Ottawa. At the same time, rate increases were held to some of the lowest levels we have had in the last 20 years.

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We feel this is encouraging news. It is encouraging because it shows that Hydro can supply Ontario with affordable and reliable power and at the same time reduce emissions, which is required by the law. We have done it in the past, we are doing it now and, I assure the members, we will continue to do it in the future.

I would also urge you to recognize that this is not a simple task. Effective acid gas control is a complicated and costly business. For example, predicting how much coal Hydro's fossil stations need in order to meet our needs is very uncertain. That is because coal is what we call our swing fuel. We use it to meet sudden and often unpredictable power requirements brought on by such things as greater demand, cold weather, nuclear outages, delays in the nuclear stations coming on stream, the problems we have been having with transmission lines, which I think you have heard about in other contexts, and reductions of hydroelectric power because of low water conditions at times. Coal gives us the flexibility we need to cope with all those unforeseen changes.

This unpredictability factor is inescapable for a corporation like ours that has to cope with so many changes in the world. I do not make that as an excuse, but I want to make sure it underlines the challenge of the problem we face.

We have a number of options designed to reduce acid gas emissions. We can reduce the amount of coal we use. We can reduce the sulphur content of the coal we use or we can install emission control technology, commonly called scrubbers. There are various kinds of those and we will talk about them in a minute.

Our most effective measure in reducing our reliance on coal has been to replace it with nuclear power. Between 1984 and 1986, our total consumption was cut back by 35 per cent. That was a result of the new nuclear units coming on line.

We have also reduced the sulphur content of the coal itself. We do this in two ways. We buy low-sulphur coal from western Canada and the United States and we subject much of this coal to a washing process which further reduces its sulphur content. Since 1976, we have managed to decrease the average sulphur content of our coal from 2.4 per cent to 1.5 per cent today.

What about the possibility of using more low-sulphur coal from western Canada? I think this is an issue that has been badly misunderstood publicly.

At present, about 25 per cent of the coal we use comes from western Canada. As our coal consumption declines over the next five to six years, the cutbacks will come from the US coal deliveries. There was recently a federal task force on western coal. It recognized that Ontario Hydro would be reducing its use of coal over the next few years and asked that those reductions be taken from the US rather than from western Canada.

We have agreed to that. We are maintaining our purchases of western coal and, as a result, the proportion of Canadian coal used at our plants will go up to 50 per cent by 1992. By the way, after that we will start to increase the use of coal again, so there is a great opportunity there for western Canadian coal.

The main obstacle to increasing the tonnage is the price of western coal. Partly because of the transportation costs, Canadian coal ends up being about 40 per cent more expensive than US coal. Last year, Ontario Hydro spent about \$200 million for western Canadian coal, and the premium or extra price we paid for western coal compared to US coal was about \$70 million. That is quite a substantial premium we paid to buy that coal.

We buy it for two reasons: for environmental reasons--it is clean coal--and also because we feel as a good corporate Canadian citizen we should give preference to Canadian suppliers when we can.

Over the short term, the contracts we have had with US coal suppliers make them the more attractive alternative and, at current pricing conditions, it would still be much cheaper to pay for scrubbers and use higher-sulphur American coal than to buy equivalent Canadian coal. That is something we have to weigh. We have heard about more jobs in the west with western coal, which is a nice idea. However, it would be cheaper--and we are talking about cost to our customers--to buy US coal and install scrubbers. Producing the scrubbers would create many thousands of jobs in Ontario. We have often heard that from some people who advocate scrubbers, that it would be a big industry and create a lot of jobs. Those are the kinds of things we have to balance off.

The opportunities for Canadian coal producers might be better in the 1990s, when we anticipate that our use of coal will start increasing again. Ontario Hydro is open to buying more western coal, but we think those opportunities depend on those people getting out their sharp pencils and doing something about the costs. We are talking about not only the coal suppliers but also the railroads, because it is a little bit disconcerting to us when we find that the prices they are charging the Japanese, both for the coal and the transportation, are considerably lower than the prices they are charging us.

We are locked into contracts with them, so they are within their right to say, "That is fine," but I think when we are talking about buying additional coal from them or renewing those contracts that expire in 1992, we will be looking for them to sharpen their pencils, just as they have had to do to maintain their share of the Japanese market. We think there is good room there for quite productive discussion.

As well as using low-sulphur coal, Ontario Hydro is looking at technological solutions to the acid gas problem. We have a number of options which are either being used or being studied for future use. At present, all eight boilers at Nanticoke are being equipped with low NO_x burners. This will reduce nitrogen oxide by 35 per cent.

The measures I mentioned are expected to keep our emissions within our limits up to 1994. We have also some other measures available.

After the completion of Darlington in 1992, our use of coal will rise again, and by 1994 the most stringent acid gas limits will have come into effect. Consequently, we are taking steps to allow control technology to be retrofitted to our present coal-fired stations so that they can be operated under the range of conditions necessary to meet the demands in the 1990s and beyond. We are proceeding to obtain the necessary approval to do so under the Environmental Assessment Act.

Talking about installing scrubbers, they have to be the subject of environmental hearings to see the type, how they would work, the effect they would have, the disposal of the waste and the sludge they produce; all those would have to be studied environmentally before we can actually do those things. To prepare for that, we have said we will be spending over \$7 million to do the environmental assessments on different types of scrubbing technology. We will be prepared to put those appropriate scrubbers on our plants when the time comes; when we start burning more coal.

I hope this has given some indication of the complexity of coping with acid gas emissions. There are no quick-fix solutions, nor do the solutions come cheaply.

We have estimated expenditures to meet and maintain the new government limits could reach about \$5 billion, and we will be going into that in some detail in our presentation, and \$2 billion of that would be new capital investment. The total cost of that would add about five per cent to our electricity rates over that period.

If these costs are necessary to do the job, then, of course, we will have to pay them. We will have no choice, because it is the law. However, we are looking at ways to reduce those costs, because we are also very conscious of the fact that we have to keep our electricity rates competitive.

One of the advantages we have in Ontario, one of the reasons the Ontario economy is probably one of the best in the world right now in terms of our economic growth--certainly we are leading the United States--is that we can sell power at approximately half the cost of Detroit and the cities across from us in New York, at one third the cost of New York City and one fifth the cost of Japan. That is a great economic advantage we have, and we have to be careful. We do not want to fritter that way.

While we will do these things that we have to do and add the cost, we know that every time we add one per cent to our rates, it cuts down our competitive edge for attracting industry here, so those are things we have to be conscious of.

We are trying to do it; there is no question we will achieve the environmental requirements. The question we have is how to do it in the most economical way and how to do it also, at the same time, in the most efficient way.

In conclusion, I want to assure members that we remain committed to achieving the emission limits that have been set forth by law.

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Mr. Chairman: Just before Mr. Hill begins--if indeed it is Mr. Hill--Mr. Mancini had a question.

Mr. Mancini: If it is in order, Mr. Chairman, and if it is all right with the rest of the members, I would like to ask a number of questions about the arrangements we have with western Canada.

Mr. Chairman: Can you wait until the end of the presentation for a clarification of the statement?

Mr. Mancini: Certainly.

Mr. Hill: My name is Arthur Hill. I am director of system planning. To summarize what the chairman has said, briefly, emissions are now dropping sharply and we are within the regulation. He has said that we have a program in place to the mid-1990s, and that we have options for the late 1990s being developed.

I think the first thing we would like to do in this presentation is be brief. What we would like to do, though, is cover the important role that coal-fired generation plays in providing electricity for the people of Ontario. We would like to provide you with information on acid gas emissions from the stations and on the methods now being used to control them.

We would like to provide you with a description of the portfolio of control options now being developed for use in the middle to late 1990s. The way we would like to do this is that I will deal with the role of coal and emissions to date, and then I will ask Ron Taborek, who is the program co-ordinator in system planning division for the acid gas control program, to deal with control measures and the portfolio of control options. I remind you that we have with us Joe Walters, the director of the thermal division, and we will have, if he has not arrived yet, Al Holt, director of the fuels division.

First is the role of coal. The lower-cost hydraulic and nuclear plants are the first which are used on our system, and they are used to the maximum extent possible to meet electricity needs. Coal then supplies the remainder of the customers' needs; so coal, as the chairman has said, is our swing fuel.

Some of the requirements can be forecast. Some are the result of responding to random or unforeseen events. It is coal that ensures that the electricity system remains secure against uncertainty. To some extent, too, with the transmission system we have, there are some times when we have to operate the coal-fired plants regardless of what other facilities we have on the system.

Coal provides additional electricity at times of strong economy, unusually cold winters or hot summers, low rainfall, low nuclear production, stronger demand for electricity in the United States when we export or when transmission lines cannot deliver cheaper energy into the area.

The investment by the people of Ontario is about \$10 billion in coal-fired generation at replacement values, so it is a very considerable investment we have in the coal-fired plants. In terms of capacity, it constitutes 37 per cent of today's capacity.

Looking at changes in coal use over the years, as you all know, there was a time when Hydro was hydro and that is all we had. We had no coal. The first use of coal to generate electricity was in the 1950s at the R. L. Hearn generating station in Toronto and the J. Clark Keith generating station in Windsor. Coal was introduced because the economic hydraulic sites were rapidly being developed, the province was developing and we had other needs.

The construction of Lakeview, Lambton and Nanticoke led to further growth in coal capacity during the late 1960s and 1970s. It occurred to me as I re-read this at lunchtime that Lakeview used to be Long Branch and its construction actually started in the late 1950s.

Coal use increased steadily to a peak of about 14 million tonnes per year in the early 1980s. It met one third of electricity needs in this period. It supplied about 35 per cent of the province's electricity needs in the early 1980s. A rapid decline in coal use is occurring now in the mid-1980s. This is expected to continue until the early 1990s, mainly because nuclear generation is displacing coal.

If you can cast your eye over the year 1986 in the illustration, the preliminary figure for coal generation in 1986, which is our most recent year, of course, is about 24 million megawatt-hours or 24 terawatt-hours, so it is still a substantial part of our generation. As the chairman has said, looking to the future, we have a forecast that in 1992, coal production will drop to about 14 terawatt-hours or 14 million megawatt-hours, but it will then rise again if we meet the most probable load growth. It will rise to close to 40 terawatt-hours by the end of this century.

It is obvious from that information that coal is vital for the 1990s. It is the source of generation that makes up what is not provided by hydraulic and nuclear. We have options with hydraulic generation and conservation planned for the 1990s, which we described to a previous select committee last year, but those will not provide for all of the needs. Coal will provide for a large portion of the additional needs in the 1990s. It will continue to provide insurance against unforeseen and random events.

Before leaving the subject, it is a difficult situation for the planner of coal supplies, who is Al Holt. He is faced with a situation where coal purchases by Ontario Hydro are going to decline quite rapidly over the next few years, but then he is going to have to secure additional supplies quite rapidly; so it is a different situation from the one we have been faced with in the past where coal consumption was continuously rising. We are now facing the situation where coal use is declining and the contracts to provide that coal are declining. Then he will have to build up coal supplies again. He faces a difficult task.

Let us take just a quick look at the location of fossil stations, for those who are not familiar with them--and I suppose most people in this room are familiar. Looking at the top right-hand corner, we have the far west of the province, the northwest, Atikokan and Thunder Bay. Both have thermal generating stations.

Towards the bottom left, starting with the southwest of the province, we have J. Clark Keith at Windsor, which is the oldest generating station. That was put into service between 1951 and 1961. Lambton, which is a modern generating station, was put into service between 1969 and 1970. Nanticoke, on the north shore of Lake Erie, was put into service between 1963 and 1978.

Then on Lake Ontario, we have Lakeview generating station, just to the west of the city, and the R. L. Hearn generating station, which is a familiar landmark in the city. To the east of Lake Ontario, we have Lennox generating station, which is oil-fired and, at present, mothballed. I should mention that the J. Clark Keith station is also mothballed. Those are installed but not in service.

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If we can look now at emissions to date, we will only really talk about Ontario regulation 662/85 to cover the most recent past. In December 1985, the government imposed additional and stricter obligations on Hydro as part of the overall federal-provincial program against acid rain. We must reduce total emissions of sulphur dioxide and nitric oxides in stages to less than 215,000 tonnes by 1994. The illustration shows the step-downs from 430,000 tonnes, through 280,000 tonnes, to 215,000 tonnes by 1994.

Actual emissions in the 1980s ranged from 489,000 tonnes to 531,000 tonnes in 1983. Consequently, a reduction of about 60 per cent is required from that last number. We reduced our emissions by 189,000 tonnes between 1984 and 1986. Emissions were 320,000 tonnes in 1986, down from the 1984 level of 509,000 tonnes.

This was accomplished while supplying record amounts of energy and power. The energy growth over this two-year period was equivalent to supplying a new city the size of Ottawa every year. The January 1986 peak demand of 20,668 megawatts was 1,772 megawatts higher than the January 1984 peak demand. At the same time, the approved rate increase of 4.1 per cent, together with the one in 1986 of 5.5 per cent, was the lowest this decade.

Looking at meeting the emissions in the 1980s, the reductions we have achieved have kept Ontario Hydro within the limits established by the government. The drop from 509,000 tonnes in 1984 to 320,000 tonnes in 1986 represents a 37 per cent reduction in two years. By comparison, when the United States government implemented the Clean Air Act, US utilities required nine years to reduce sulphur dioxide emissions by 17 per cent.

Looking to the next five years, programs are already in place to keep emissions below limits into the early 1990s. Our primary interest in the period to 1994 is to ensure that sufficient flexibility is available to accommodate unpredictable circumstances.

Before leaving that and asking Mr. Taborek to talk about control measures, I would like to say simply that we have done very well in the last three years. We are making a prediction that we are going to do well in the future. I am in the business of making some predictions and I must confess to some concern that the uncertainties may be greater than our ability to meet them. I can only reiterate what the chairman has said, that it is our belief now that we are going to meet the emission regulations.

Mr. Taborek: The question has frequently been raised, is there technology or other ways to reduce emissions? Yes, there are a great many ways. The chart we are putting up now basically shows a list of those available to us.

Our approach is to keep a portfolio of these options available for use at any time and to select the most economical set as and when required. You will note that the options available all have very different characteristics, such as the amount that might be available or the time required to put them in place. Also, the price of each of those options can change, sometimes very suddenly. Recent oil prices are an outstanding example of the latter.

Consequently, we have to put a dynamic, not a static, program into place. We have a situation that is different from the smelters, which basically build a process and use it for one, two or three decades. We are

basically in the energy markets every day and every week, meeting a very changing circumstance, so we are designing a dynamic program.

If you look at our control options, they can basically be divided into three broad categories. Acid gas emissions can be controlled by reducing coal use, by reducing the sulphur content of the fuel in use or by installing various kinds of technologies. A listing of available options in each category is shown on the overhead and in the documents you have.

The manner in which we used that portfolio in 1984, 1985 and 1986 to meet electricity and environmental needs and to keep costs in hand is documented in this balance sheet we are showing you now. You will note the demand section. We show that Ontario's electricity use grew to record levels in 1984, 1985 and 1986. On the other hand, the price of oil declined, and United States utilities found it increasingly economic to use their own generation. Consequently, our exports declined, which tempered the total demand on the system.

Looking at the supply section, the contribution of hydraulic generation and purchases from other provinces to meet the demand was relatively constant over the three years. Hydraulic generation was running about 37 terawatt-hours and purchases in the range of seven to nine terawatt-hours.

The major effect was that of the new nuclear units coming into service, with production rising from 40 to 58 terawatt-hours in the period. This allowed the new demand to be met and the use of coal to be reduced by 35 per cent. Within two years we lowered the amount of coal we burned by 35 per cent. Together with that, we lowered the sulphur content in the coal we burned from 1.64 per cent to 1.51 per cent. This was the second major factor we used to reduce emissions.

If we look at 1986 to see how much each of these measures contributed, nuclear units provided the equivalent of 19 million tonnes of coal and avoided 560,000 tonnes of emissions. Purchases of electricity from neighbouring provinces also avoided the use of two million tonnes of coal and 68,000 tonnes of emissions. The reduction in coal sulphur levels was achieved by washing the coal we bought to remove sulphur and waste and by buying lower-sulphur coal. They avoided 90,000 tonnes of emissions.

Similarly, we are working on a program to install low-NO_x burners at the Nanticoke generating station. Five of the eight units are complete; they will all be complete by 1988. Nitric oxide emissions are being reduced by 35 per cent as a consequence.

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We mentioned the dynamic situation we find ourselves in. Our emissions can swing very suddenly on us. The amount of coal we use and the resultant emissions can vary for reasons outside our control. The reasons basically relate to either an unexpected increase in demand or an unexpected decrease in the amount of electricity from the lower-cost generating sources such as hydraulic or nuclear generation.

Each of the following examples would result in an increase in emissions of between 40,000 and 100,000 tonnes. Lest I be painting the picture too blackly, if they perform better than we have planned, there is a very significant improvement in our emission picture. There is that side of the coin too.

Unusually dry weather, for instance, resulting in less water available for hydraulic generation, would result in major increases in the amount of coal we burned. For instance, if we were to again experience water levels as we did in 1963, we would have to burn more coal, and there would be 100,000 tonnes more of emissions.

The loss of a Pickering unit for one year would cost 50,000 tonnes of emissions; a Darlington unit about 90,000 tonnes.

Delays in obtaining approvals for transmission, for example, will also increase emissions. The plan approved in a hearing can result in changes in emissions. For instance, the plan chosen in the recent hearings on the Bruce transmission will result in an extra 45,000 tonnes and, of course, the delay of five years in obtaining approval of any plan results in a cumulative increase of 200,000 tonnes from 1986 to 1990.

If the price of electricity purchases were to go up, if people were to raise prices of the energy supplies we buy, and we were unable to buy, that would drive up emissions, since we would turn to more coal.

If we were in a strong economy, which we are at the moment, with an extra one per cent of our forecast load growth for three years, we could expect an extra 60,000 tonnes of emissions to deal with. The point we would note is that these are not separate and discrete events; they can happen together, piled one on another.

Given that, we put a program in place that will not only meet the limit but also cater to some contingencies. The graph basically shows how our coal consumption will reduce over the years to 1992, and the sulphur level in the coal will also reduce over that period. This program will meet both our electricity needs and our acid gas control needs to the mid-1990s. As I say, it also provides a margin for some contingencies.

We would now like to turn to look at the portfolio we are putting in place for the middle to late 1990s. As we have mentioned, with the completion of the Darlington station, we will again be relying on coal to meet the growth in electricity needs in the province. Our current forecast is that the electricity needs will grow at about 600 megawatts per year in that period. To make this doubly challenging, the acid gas control regulation reaches its strictest level, the lowest ceiling of 215,000 tonnes, in 1994 as well.

As we look at this, we basically turn to the same broad choices we have now. We can reduce the use of coal or provide new, clean supply options. We can reduce the sulphur levels in the fuel we burn, or we can install emission control technology on the plants we now have.

We are basically developing all those approaches at present to have them ready to use as the need arises and as the circumstances at the time develop.

Turning to the first area, those alternatives in the area of new demand and supply options, the electricity system now in place or under construction will provide for the electricity needs of the people of Ontario until about 1997 if conditions develop as now forecast, but only to about 1993 if electricity need is higher.

As a result, planning is under way to determine how electricity needs might best be met in the future. Meeting environmental requirements is an integral part of this planning. A wide range of possible demand and supply

initiatives are being considered with public input, and a select committee on energy of the Legislature held hearings on the subject in April 1986.

Decisions are expected to come out of this process during the late 1980s. They will provide a necessary foundation for selecting the right acid gas control initiatives from our portfolio for the middle to late 1990s. One set of alternatives will be low-sulphur fuel options. All but one existing coal contract expires by 1995. Our new coal commitments will depend on a number of factors, including, among others, the amount of electricity we need, the amount and type of new demand and supply options that will be introduced, the amount and type of control technology retrofitted to the existing coal plants and the relative price of fuels.

Adequate quantities of coal are expected to be available in a competitive marketplace. Lower-sulphur coals in the US and Canada are found at greater distances from Ontario than higher-sulphur coals and hence have to face the expense of transportation. Market prices for low-sulphur coal will depend on the results of acid gas legislation in the US and the development of emission control technologies and the pressures they put on the coal markets.

Gas and oil, at this time, are more competitively priced than they have been for some time. When we plan to use these fuels, we basically have to take into account the very volatile nature of these markets.

That is one set of alternatives we can pursue. Another set of alternatives is to install control technology. Before we use control technology, we have to obtain the necessary government approvals to modify our existing plants. We also need to identify the control technology that is most suited to each station by doing the necessary engineering and economic evaluations.

Major changes to generating stations, such as retrofitting acid gas control technology, require Ontario government approval under the Environmental Assessment Act. A three-year, \$7.7-million program has begun to obtain this approval. An environmental assessment document will be submitted describing a satisfactory method of dealing with the environmental impacts of installing scrubbers. Approval would be sought for the flexibility to install any of at least four types of control devices on any of our three major generating stations within the next 20 years.

The four control technologies identified as primary candidates at this point are: wet limestone; lime spray dryer; limestone dual alkali; and limestone injection. These are basically chemical processes that input alkalis to react with the sulphur dioxide in the flue gas. This produces a new compound that is extracted and stored. The four control technologies, along with the specific site characteristics and waste disposal methods, will be evaluated to identify the most suitable combination.

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That basically encompasses the options we are now developing for the middle to late 1990s. As we say, the program up to then is now in place.

We have made some estimate of the cost of meeting the existing control order of 215,000 tonnes a year beyond 1994. The estimate we have prepared uses our most likely forecast in the growth of electricity use. Some of the modest demand and supply options currently planned are discussed for the system: emission control technology retrofitted to our coal-fired units when their use

is high enough to justify using them and low-sulphur fuels used in units without control technology. We estimate that by the end of the 1990s, in dollars of the year, with this alternative, we would have spent \$5 billion and electricity rates would be five per cent higher than they would otherwise be. This is for that technology only. This particular approach to controlling emissions would require capital investments of about \$2 billion.

I would like to say this is one example, and one could construct other examples with more or less capital and different option mixes. They will not be cheaper. We have not been able to find a cheaper one yet. However, we are looking for ways to reduce those costs.

In conclusion, we basically note that we see the obligation placed on us is to meet the electricity needs of the people of Ontario, to do so in an environmentally acceptable manner and at the lowest long-term cost. Our emissions are now dropping sharply, a program is in place to stay within the regulation up to the mid-1990s and a portfolio for the late 1990s is being developed.

Mr. Chairman: Thank you, Mr. Taborek. Members of the committee, I am just waiting for Mr. Mancini to get ready to ask some questions.

Mr. Campbell: Mr. Holt, our director of fuels, has just joined us.

Mr. Mancini: I was very interested in your opening comments as to the issue of western coal and how we were treating it. As you know, it has become a sensitive political issue. The way you explained it to us this afternoon here in the committee, it seemed that Ontario was taking a pretty reasonable position in regard to western coal, if in fact it is costing us \$70 million a year more than American coal, for one reason or another, and if in fact we are losing high-technology jobs because we are not implementing or extending the scrubber program.

I was wondering if you could enlighten us as to whether a similar presentation has been made to the concerned people of western Canada, who do have some valid grievances about the way our confederation is run. I wonder if the same type of presentation has been made, for example, to the energy ministers of the other provinces and to the Minister of Energy, Mines and Resources of Canada.

Mr. Campbell: We find that in western Canada there is very good understanding of this. For example, we could send you some clippings from the Edmonton Journal, which recently interviewed Mr. Holt. They seem to have a very balanced view. First of all, they said Ontario was already buying a lot of western coal, they realized we did not need any more for the next few years, but there was an opportunity in the 1990s to sell more, and in that time the key issue would be the price competitiveness. They believe we have treated them very fairly.

Mr. Holt can perhaps elaborate on that. He has been out to western Canada to talk to them all. In fact, I personally have had delegations from the Alberta government, their Ministry of Energy and their coal co-ordinator--I think that is his title; he comes down regularly to see us. They understand it clearly. As you point out, there is some misunderstanding. There are some people who want to whip up some political issues between western Canada and eastern Canada. People out there in the business are not complaining.

Mr. Holt: I would like to add to that, following what the chairman said, we have extremely good relationships with those in the western Canadian coal industry. We are not the cause of their problems. We signed contracts in the mid-1970s for quantities of coal. At that time, they found it quite difficult to provide it for us, because their main market was the Pacific Rim.

Since that time, we have honoured those contracts. We have taken our coal, although there have been difficulties because of the declining requirements and the world is now awash with energy while their other customers offshore, the Japanese and other people who have bought their coal, have dramatically reduced their take.

The problems with the coal mining industry in western Canada have been caused by forces external to Canada, and we are certainly not getting blamed for it in some ways. It is a case of whether we can take up the slack. Unfortunately, that situation has arisen at a time when our own coal requirements are declining, so we have not been able to do any more than maintain the commitments that we had. I think they well understand that situation, they are appreciative of it and they are looking more for a sustaining of that supply into the future years in the 1990s.

Mr. Mancini: I am very concerned that someone like the Deputy Prime Minister of Canada would make the statements that he did about Ontario Hydro's purchase of coal and future purchase of coal. We all understand that he is one of the leading spokesmen for western Canada. I did not have this information at the time. I guess we all remember that Alberta was quite upset about not getting world price for its oil within Canada; so I do understand that grievance. But I was not aware of the fact that we were subsidizing \$200 million worth of coal to the tune of \$70 million a year, which is a very significant subsidy.

If you are telling me the western Premiers and western energy ministers fully understand our position and what we are doing, can you in any way account for the recent--and I do not want you to get into the political end of it; I am not going to ask you to do that--

Mr. Holt: I would like to answer your point on subsidies. We do not say that we pay subsidies. Western Canadian coal costs more than coal from the United States because it is, for one thing, a lot farther west. When we entered into the contracts, we knew the coal was going to cost more; that did not stop us from doing it. We did it because we wanted that diversity of supply and to source some of our coal in Canada. So we do not say this is a subsidy; it is an additional cost we pay, the same way we buy uranium from Elliot Lake that costs more than buying it from western Canada. We have a reverse situation in that case.

I cannot get dragged into why Mr. Mazankowski said the things he did. All I can say is that I believe there is a very good understanding of the way Ontario Hydro has handled its business in declining needs. In the western Canadian coal industry, you will not find any quotes where they have been critical of us. The governments of Alberta, Saskatchewan and British Columbia have also met with us and understand our situation.

Mr. Campbell: For example, Mr. Holt, our president and I had lunch with Premier Vander Zalm a short while ago in Toronto. He was very understanding of the situation. He had a very realistic assessment. He realized that we have been good customers, that we continue to be good customers, that we have continued on with our contracts when the other foreign

takers have cancelled and that there is an opportunity to do more business in the future but we cannot wave a wand and solve the problem overnight. He was not expecting that.

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Mr. Mancini: Let me put it this way then. It appeared from the comments that were made at the time by the Deputy Prime Minister, Mr. Mazankowski, a leading spokesman for western Canada, that they certainly did not shed the light we are able to see here today. From my point of view, it made Ontario Hydro look--I would not say "negative," but it made it look as if we were not interested in the rest of Canada and taking part in Confederation.

Mr. Campbell: I do not think you will find any western political leader or anybody in the coal industry who would say that kind of thing.

Mr. Mancini: Mr. Mazankowski is a western political leader. If it is costing us \$200 million a year to buy coal from the west and if \$70 million a year is--even in your own statement, sir, you used the word "premium;" you did not use the word "subsidy." "Premium" could be connoted in many different ways: "...and the premium we paid was \$70 million." That is using your own words. If that is the case, then I think the general public in Ontario has to understand that, because we are making a contribution to keep Canada together, and the leading western spokesmen have to understand that. Until I heard your presentation this afternoon, I almost believed they had a legitimate grievance against central Canada. I am glad to see it is not so.

Mr. Campbell: I am glad to see there is interest, because I agree there has been misunderstanding on this issue. I do not think it is in the west. We can send you clippings from western papers that have a very fair picture. There has been some misunderstanding.

I went over a list this morning of some of the things we are doing in addition to purchasing the coal you mentioned just now. As you know, Thunder Bay terminals were upgraded to handle that coal, and we are helping to retire the debt. They have a debt of about \$70 million for that coal terminal, which we are contributing to retiring. That is another contribution to the western coal industry, although that terminal handles grain as well.

We invested \$60 million in unit trains and locomotives that are travelling across the Prairies every day bringing western coal to our plants at Thunder Bay and Atikokan and then transshipping it at the Thunder Bay terminals down to Nanticoke. That is another \$60 million.

Our Atikokan plant was a capital investment of \$650 million, and there was an additional \$50-million premium on that plant to enable it to burn Saskatchewan lignite. We have a coal plant at Thunder Bay that cost \$350 million, and there was \$20-million premium on that plant to permit it to burn any fuel, including the different types of fuel from western Canada.

We installed a blending facility at Nanticoke to blend the western Canadian coal with American coal, because our plant there is designed to burn US coal. To burn western Canadian coal, it has to be blended with US coal to get the proper mix suitable for that plant. That was an investment of \$50 million.

As a result of all this economic activity, there were two Great Lakes vessels constructed at Collingwood to carry this coal; so that was another economic impetus for this whole program.

I think we have a very good story to tell and a very good record of being very good Canadian corporate citizens in terms of our relationship with western Canada.

Mr. Mancini: That is very interesting. I wonder what the free trade proposal of Mr. Mazankowski's government would do to something like this. I wonder what free trade would do for the kinds of expenditures we have undertaken and the premium--I will use your word instead of "subsidies"--of \$70 million.

Mr. Campbell: We believe that all those expenditures are quite legitimate and that they are all necessary to burn that kind of coal. There are some people who talk about transportation subsidies and we, as a country, have to be very careful of that. My understanding is that the western coal producers do not want to hear that, because it would definitely bring the Americans down on us if we started to subsidize the transportation costs. It is quite a complicated issue actually.

Mr. Holt: I would just like to add that when you look at what we have done with the coal program, in 1984 we bought 16 million tonnes. This year we will be buying only about nine million tonnes of coal in total. By 1990 we will be buying only somewhere around six million tonnes. Almost all that decline has been taken out of the American coal supplies. Canadian coal supplies are being kept in around the three-million-tonne level because, when we signed the contract, we made a commitment to move 45 million tonnes of coal from western Canada. We will have met that commitment by the early or mid-1990s.

The question you raise, though, is very interesting because some of the electricity--in fact, quite a bit of it--accounting for perhaps 13 million tonnes of coal, goes back to the United States as electricity exports. One of the reasons we feel Ontario Hydro has some good defences against embargoes on electricity imports is that we use some US coal.

If we displace all the US coal, first, the cost would not be economic and we would not be able to sell electricity economically in the United States. Second, if we then displaced US coal, subsidized the electricity and tried to sell it back into the United States, I think we would be in exactly the position you raised about the free trade issue. It is one of the reasons we believe the future holds some US coal and some western Canadian coal, just the way the present does and the past did.

Mr. Mancini: Without being too unkind to Mr. Mazankowski, who is not here to defend himself, I think he is being somewhat mischievous.

Mrs. Grier: I have a number of aspects I would like to cover with Hydro. First, let me talk about environmental assessments and say how pleased I am that Hydro has been converted to the need for them. I am interested that environmental assessment are being contemplated for the scrubbers and I wonder what led you to that position. I would like to hear you say how you can reconcile it with the fact that you did not need an environmental assessment for a tritium recovery plant at Darlington, but perhaps that is a tangent we do not have time to explore.

Mr. Campbell: What led us to it was the realization that, with the very stringent emission requirements being put on us, we would require some form of scrubbing technology on our coal plants some time after 1992 or 1994, in that area, because with the load continuing to grow, part of this is that

we are victims of Ontario's success as an economic centre. Our growth is such that we will have to start using our coal plants to a much greater extent again in the 1990s, just to keep up with the load. Basically, we are now meeting a lot of the basic requirements by reducing the use of coal, but once we start increasing the use of coal again, we will face the fact that we will have to have scrubber coal plants of some kind or, as Mr. Holt will argue, perhaps low-sulphur coal, much of it from western Canada, will be an alternative to that. We want to be prepared.

The reason we are going for assessment on a variety of technologies is that we are very conscious of the cost. We want to be able to go with the best solution to the problem at the time. We recognize that improvements are being made as well. The best solution, as far as we are concerned, is to wait until we absolutely need them and then get the most modern, the most appropriate technology to put on those plants. We are starting the environmental assessment now so we will be ready for that.

Mrs. Grier: To be sure I am clear, you are now starting to prepare environmental assessments for the three major coal-burning plants, looking at all four of the technologies you outlined to us today?

Mr. Campbell: Right, and those technologies may be aptly applied to, some of our plants, for example, if the Keith plant in Windsor or the Hearn plant in Toronto were ever brought back. I am sure we would never be allowed to fire up the Hearn plant in Toronto with coal again without either scrubber technology, very clean coal or maybe natural gas.

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Mrs. Grier: In the case of Lambton, Nanticoke and Lakeview, you are not expressing any preference for any particular technology for each of those plants; you are going to look for an assessment of all four options at all three plants.

Mr. Campbell: Yes, that is right.

Mrs. Grier: Do you anticipate having those environmental assessments ready by the date, the end of 1988, that the government established?

Mr. Taborek: We will be submitting the environmental assessment document early in January 1988. It is very difficult to predict how long it takes to get an approval, but we have tentatively set 18 months. That would be mid-1989.

I would like to draw a distinction. Our declaring our plans at that time does not basically depend on having the environmental approval for the scrubbers at that point. They may not be required until some later date, and indeed, we may choose low-sulphur coal. But we want to have it available as and when necessary.

As a matter of fact, that date leads to an earliest in-service date of 1994, when the emission level drops to its strictest level.

Mrs. Grier: The environmental assessments are only looking at the scrubbers; they are not looking at any of the other technologies?

Mr. Taborek: That is correct. We want to have those scrubbers available, ready to go as and when needed, sort of to be able to pull them off

the shelf without at that point going through long and uncertain environmental approval processes and basically to have the lead time down just to the construction time.

Mrs. Grier: Then you are not anticipating any improvements in the technology of scrubbers between the time you submit the environmental assessment and the time of installation.

Mr. Taborek: I have to answer yes and no in that there are improvements in technology coming, but we believe we have chosen the best for now. However, the program EA will also have in it a process by which, should an attractive new technology become available, it can be incorporated into the approval. I mentioned we have this dynamic need. We are looking to set in effect a dynamic response.

Mr. Campbell: With the length of time it requires to go through all these approval processes, we are starting none too soon. We are going to have quite a tight schedule to get through the approvals and then get into the construction phase and perhaps have some of these on line by 1994.

Mrs. Grier: All that is built into your planning in order to meet the minister's requirements?

Mr. Campbell: That is right.

Mrs. Grier: I am surprised that in your submission you did not make any reference to the unique part of Countdown Acid Rain that applies to Hydro, and that is the whole banking procedure. I would be interested in some comments from you as to how you see this banking of the amount of emissions you do not emit working, how much you think you have banked at this point, when you might anticipate needing to use some of those banked emissions and also the procedure, because I should say to you, when the ministry officials were here, we talked a bit about the procedure that needs to be gone through before you can extract from the bank.

They seemed to feel there would always be enough lead time to establish a procedure when the time came to use the bank. I am not sure I agree with that, so I would be interested in knowing how you view it.

Mr. Taborek: If you look at the regulation as written, you will see certain factors have already been laid down. Basically, if we are under the existing regulation in a year, we can bank the SO₂ component as a credit, a fictional credit, in our bank account. There are no provisions for withdrawal at the present time, other than to argue a case to the minister, and the minister will take it to cabinet and it will be decided by cabinet. Those are the only withdrawal provisions.

A second aspect to the bank that is already established in regulations is that if a deposit has been in for five years, if you will, it vanishes. You can only keep in your bank account how well you have done for the last five years.

We talked a good deal about variability and about sudden and unforeseen things that could happen that could put us into a bind. It is in circumstances like that where we would seek to use the benefits we have gained or demonstrate a good performance to offset that until it could be paid back. If we should be in a very strict position, there is a provision for drawing from the bank and paying back. How often? We hope we will never have to use it.

We are basically planning to do a very difficult job in a very uncertain world in instances where many things are out of our control. I would hate to think that as a company we would make very good efforts, achieve massive emission reductions, make significant investments and then, for reasons outside our control, be labelled as criminals or whatever for having broken a law we had done so well for so many years to meet.

Mr. Hill: May I just quote from paragraph 7 of the regulations? It says we have to review the status with regard to the banking, "report thereon in writing to the Minister of Energy and the Minister of Environment by the 31st day of December, 1988, in sufficient detail so that the Lieutenant Governor in Council can review the options available to Ontario Hydro and determine what numbers of kilotonnes of sulphur dioxide and tonnes of nitric oxide should be established by amending this regulation for purposes of subsections 2 and 3" which deal with the banking.

Mr. Campbell: If I could just mention something, as Ron said, it is our intention and hope that we would not have to use that provision. You may ask, "Then why have it if you do not intend to use it?" Not only do we not intend to use it, but also all our planning will make it unnecessary. We are planning to be under those limits, so it will not be necessary.

However, if we did not have that provision there, it is always our full intention to obey and respect the law. You mentioned we could be subjected to a \$5-billion expenditure to fit those scrubbers when they are needed. If we did not have that kind of provision, we might find ourselves in a position of fitting scrubbers on plants that are going to be used only 10 per cent of the time just in case we had a breakdown in another part of our system. That is when you get into very uneconomical kinds of expenditures. We do not object, nor would our customers, to putting scrubbers on plants we are using a substantial portion of the time, but if we have plants standing by just in case something happens, then it is uneconomical to install a scrubber on that kind of plant.

To prevent ourselves from being in danger of breaking the law, we might be forced to that kind of uneconomical decision, if we did not have that banking provision. It is our planning and intention not to use it unless there is some force outside our control.

Mrs. Grier: If something outside your control, such as more pressure tube failures or something of that magnitude occurred at one of the nuclear plants, are you saying then that because you have not put scrubbers on any of the coal-fired plants in the event of a contingency, you would then use the bank and that is what the bank is there to do?

Mr. Campbell: That is right.

Mrs. Grier: For example, we could have--I do not know how long Pickering has--a year of your using banked emissions.

Mr. Campbell: We plan to have a cushion ourselves for that period of time. In my estimation, it would only be quite an extraordinary set of occurrences; for example, if there was a nuclear plant shutdown, unexpected growth or maybe low water. We were having high water in Lake Erie a few years ago. If several things came together, I think we might have to use that.

Mr. Holt: I might add that one of the ways we plan the coal supply to deal with that situation is that we look forward and each year assess the

amount of electricity from coal that has to be produced. If we then said: "We need so many tonnes of coal and we can have a certain sulphur level and just meet the emission limit" and if any of these events we talked about happened, we would go through the emission limit because the coal is in storage and in inventories for quite a long time.

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We deliberately design the coal supply system at a lower sulphur level so that we can burn perhaps as much as 20 or 25 per cent more in a given year without going through those limits. That is why you see the line below the limits now. It is not because the limits are easy to meet. It is because we leave that room for ourselves by design. If, as you mentioned, the Pickering unit goes out and we have to burn over one million tonnes of coal in a year, we can do that because we have left that room there. We have that protection before we get into any consideration of using banked allowances.

Mrs. Grier: What is your estimate of how much you have banked so far?

Mr. Taborek: It is roughly 100,000 tonnes.

You asked about how much time there would be to review a decision to use the bank.

Mrs. Grier: Right.

Mr. Taborek: It can vary. It can be quite long. Let us suppose a nuclear plant had a problem, like the two Pickering units, and it happened on January 1. Our limit is set on a yearly basis. In effect, it is only in the latter part of the year that we would know how much our remedial measures had accomplished in the meantime and how much we had to appeal to the banked allowance. Suppose the nuclear units failed on December 30. We hope we would have had a year of good performance. We have no notice, but we really do not have a problem. We would have only one more day's running to do.

Suppose there were a shutoff of oil supplies to the United States, which turned to Canada for coal for electricity. That would again be rather sudden, but depending on when in the year it occurred, we would be looking at several months before we began to be in a position of actually breaking the limit.

Low water levels accumulate over years, if one gradually sees water levels declining. A strong demand for electricity accumulates over the years. Three years from now, we may have a problem if this continues. The difficulty is that sometimes the responses take a good deal of time.

For instance, to put in our first pair of scrubbers would take something like seven years. If we get the environmental approval out of the way, we can cut that down to four years. With coal supplies, we would certainly have transportation difficulties, if it were in winter. Mr. Holt can speak on how long it takes to get in new coal supplies. If someone were to cut or raise the prices of our electricity purchases, these are other things. The decision times are in the order of at least months and sometimes years.

Mrs. Grier: If pressure tubes go, you have time to go to the minister and cabinet to get approval to use your banking?

Mr. Campbell: We would do everything we could to bring in extra low-sulphur coal. I assume they would be pretty tough on us. They have

certainly been tough to date. I am sure that they would demand, in the interest of safeguarding the public, that we had taken every possible measure to reduce the emissions before they would allow us into those banks. The Americans have low-sulphur coal like that which western Canada has. It is more expensive, but we could pay that kind of premium if we were in dire straits. There are a lot of things that could happen that would keep us out of that.

Mrs. Grier: Can I be very clear on how the banking works? You have 100,000 tonnes of emissions banked now for what, 1986?

Mr. Taborek: Yes.

Mrs. Grier: Is your five-year period a rolling five years? In 1991 this 100,000 tonnes could be gone, however much you bank. When you get to 1994, how much do you estimate you will have in the bank by the time your coal consumption begins to rise?

Mr. Taborek: Say, for round numbers, five times 100.

Mrs. Grier: It would be 500,000 tonnes?

Mr. Taborek: I am just guessing; I have not done the calculation.

Mr. Campbell: It would never be more than that.

Mr. Taborek: It is so difficult to predict in an uncertain world. We have not really done the calculation.

Mr. Hill: I would just like to observe that I cautioned about speculation or making predictions a while ago. The longer we go on meeting this regulation, it is obviously going to get very much more difficult to put anything in the bank at all. That is really the concern. The concern we have is that when the limitation drops to its lowest point and we have a need for energy in the province to be met from coal-fired plants with scrubbers, it would still be a tight situation to meet the regulations.

I do not want to leave you with an impression, in spite of what Mr. Taborek has said. There is no way we would be able to put 100,000 tonnes in the bank after the regulation is dropped.

Mr. Taborek: Through the 1990s there is nothing to go in the bank, just small amounts.

Mr. Hill: It may be impossible.

Mr. Campbell: If you look on page 1, there is a shadow on it. That shadow is a range. We could be and we would hope to be down at the bottom end of that shadow, but we could be just skimming the top end of that range. Our planning is to have that reserve, but we are expecting that we are going to be tight down there.

Mrs. Grier: When you get down there to 1994, how much of your power do you expect to be generated by coal?

Mr. Hill: The prediction in 1994 is about 12 per cent--I am highballing the number--of our total system energy.

Mrs. Grier: Would be coal?

Mr. Hill: Would be coal.

Mrs. Grier: How much does that represent in tonnes of coal consumption?

Mr. Hill: That is close to the low point.

Mr. Holt: About six million tonnes, something like that.

Mr. Campbell: It is going to rise sharply after that, though.

Mrs. Grier: The grants you have shown us in your submission show this as around four in 1992. So will it begin to rise in 1992? That is its low point.

Mr. Hill: It has to rise.

Mrs. Grier: So by 1994 you are up to six million tonnes.

Mr. Hill: Yes, about that.

Mr. Holt: It is very dependent on load levels.

Mrs. Grier: I know that in your whole thrust of reducing emissions you have a substitution of nuclear for coal.

Mr. Campbell: Up to 1992; but after that, we go back into coal in a big way.

Mrs. Grier: Right. But let me talk about up to 1992. Again, another tangent I will not explore is the merits of building up nuclear waste as opposed to building up things to prevent acid gas, because I think you know my views on that one. Could you relate for me the graph you have shown us on coal consumption to your predictions of acid gas emissions from coal-fired plants? What impact do you think you are going to have on the actual emissions from your big three coal-fired plants between now and 1992? Do you see, in fact, no change in the amounts of emissions from those plants between now and 1992?

Mr. Holt: It is going to go down substantially.

Mrs. Grier: Through the coal-fired plants.

Mr. Holt: Yes. It is going to drop into the range of under 200,000 tonnes of emissions.

Mrs. Grier: Because of the substitution of low-sulphur coal?

Mr. Holt: And the fact that we are burning a lot less coal. We are burning nine million tonnes of coal this year; in 1992 we will be burning six million. That by itself reduces the emissions by 50 per cent. Then we are going to lower the average sulphur levels from about 1.5 per cent today to about one per cent while we get at that. If you look at those two factors, it is going to cut the emissions by more than a half.

Mrs. Grier: But you do not foresee any of your ameliorative measures such as scrubbers, limestone or whatever in place before 1992.

Mr. Holt: They are not needed to meet the emissions in that time.

Mr. Taborek: We could not put them in place in that time, anyway. As I mentioned, if you allow three years for an environmental assessment, plus four years for construction, that takes you to the beginning of 1994.

Mr. Campbell: That is when we plan to have them. The other thing I want to point out is that we mentioned the premium we are paying for low-sulphur coal from the west, but our total investment in acid gas abatement is between \$100 million and \$150 million a year. That is the total extra cost we are paying to achieve those kinds of emissions. That is a combination of low-sulphur coal from both western Canada and the United States plus other measures we are taking such as, for example, the low nitrogen oxide burners we are installing in our plants. There is a lot being done to reduce that. It is not all nuclear substitution; some of it is.

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Mrs. Grier: Thank you.

Mrs. Marland: I guess the next time we will have the pages numbered, for all our sakes, I guess.

Mr. Taborek: Sorry, it was a rush.

Mrs. Marland: No, it is fine. It would make it easier to make the references.

Anyway, under the Ontario regulation page, you refer to, "Actual emissions in the early 1980s ranged from...to 531,000 tonnes in 1983. Consequently, a reduction of about 60 per cent is required." If you go over two pages to "Meeting the Regulation in the 1980s," in the middle paragraph there you talk about, "The drop from 509,000 tonnes in 1984 to 320,000 tonnes in 1986 represents a 37 per cent reduction in two years." If I interpret that correctly, does that mean you have only another 23 per cent to go, the difference between the 60 per cent and this 37 per cent?

Mr. Taborek: The per cents tend to be confusing to get right at it. In 1986, the number was 320,000 tonnes, a reduction of 37 per cent. If you look at that graph entitled, "Emissions," and on the page, "Meeting the Regulation in the 1980s," you will see the bottom of the actual graph is at 320,000 tonnes, so we now have to get down below 215,000. I am sorry I do not know what the per cent rate would be still to go.

Mrs. Marland: That is not the question I am posing. There is a statement on one page that a reduction of 60 per cent was required in 1983. I am reading on another page that, by 1986, you had made a reduction of 37 per cent, and I realize that it is a percentage of what it is that year.

Mr. Taborek: The answer is, near enough, yes.

Mrs. Marland: I understand that.

Mr. Taborek: Near enough, yes, that we have a further--

Mrs. Marland: So, near enough, you have only 23 per cent to go.

Mr. Taborek: That is correct.

Mr. Campbell: The chart with the shadow shows we are about halfway.

The step line shows the controls we have to meet and the actual line shows where we are. You can see that we are about halfway down those steps.

Mr. Hill: May I just correct? I am doing the mental arithmetic there. The 23 per cent is from 1983. We have a drop of 23 per cent from 1983.

Mrs. Marland: That is right. That is the point of my question.

Mr. Hill: That is correct.

Mrs. Marland: We are down to now where you need only another 23 per cent.

Mr. Campbell: It gets tougher and more expensive all the time.

Mrs. Marland: I was coming to that.

Mr. Campbell: That is the tough part of it.

Mrs. Marland: I was coming to the expense, but I am not quite there.

I was also interested, on the page headed "Meeting Needs," in the second-last paragraph where you say, "This reduction in coal-fired generation was the primary means by which acid gas emissions were reduced." I found that a very interesting statement. It does not have the years, but I guess maybe it is this past three-year period.

Mr. Hill: Yes.

Mrs. Marland: For any abatement measures that were in place, the impact was that it was a reduction in the coal generation. It was not anything that was done except the alternative generation source.

Mr. Taborek: First of all, I will just say there was nothing done. There were a number of things done, but that was the major effect. If generating from coal causes acid rain, one of the best ways to stop it is just to stop burning coal.

Mrs. Marland: Yes.

Mr. Taborek: I might point out we could use that but the Americans could not. You would clear up not only the SO₂ but also the NO_x and all the other pernicious things that can come from coal plants. So you do that that way.

Having said that, it is quite right that, having stopped burning coal in a coal plant, you would not then put a scrubber on it. There is no sense. This is why the Americans can play some nice games. They say, "Ah, but you have no scrubbers." Then we say, "Oh, but we are not burning coal." They would rather count scrubbers.

If I may say too, we identify on the subsequent page how both the additional nuclear generation and purchases of electricity from Hydro-Québec and Manitoba allow us to burn less coal, but then you will see two measures where things are actually being done. They are sort of the secondary and, I guess, the fourth-ranking measures, one where we have reduced the coal sulphur levels and the final one where we have actually put technology on.

Basically, the portfolio I have shown you are things that are basically entitled, "Burn Less Coal," "Reduce the Sulphur Level" and "Fit Technology." We have chosen two from the first, one from the second and one from the third, and that is the least-cost set at the moment.

Mr. Campbell: If I could elaborate on that, something we should all be aware of is that when we fit low NO_x burners to these plants, that will reduce the nitric oxide output by about 35 per cent, but once you have done that, with the present state of technology, that is it. There is still 65 per cent of the nitric oxide that you cannot reduce, and scrubbers do not touch nitric oxide. There is no available technology to remove the nitric oxide. In fact, that is one of the problems with burning coal generally.

For example, the Central Electricity Generating Board, which is the British utility, gave a multimillion-dollar grant to the Swedish royal society, which is the society that gives away the Nobel prize. The British Royal Society wanted independent bodies to study that. They gave them a grant to study acid gas, because the Europeans, particularly the Scandinavians, were complaining that they were getting the British fallout.

In the preliminary findings from that to date, they are coming to the conclusion that it is the nitric oxide that is perhaps more the villain than the sulphur dioxide. You can scrub the sulphur dioxide, but you cannot touch the nitric oxide, except you can get a one-shot 35 per cent reduction with low NO_x burners. There is increasing evidence that it is the nitric oxide that is killing the trees in Germany and Scandinavia.

By the way, the worst source of nitric oxide is automobile exhaust.

I think we should all be aware that some of these problems are very complex.

Mrs. Marland: Are you saying those two problems are equal?

Mr. Campbell: The volume of sulphur emissions is greater than for nitric oxide. It is about three to one, I guess. As I indicated, there is some feeling in the scientific community that it may well be that the nitric oxide, particularly in Europe, is the larger villain in terms of the damage it is doing.

Mrs. Marland: Dealing with it in Ontario, if the sulphur is three to one more the villain--

Mr. Campbell: In terms of volume. We have not established what damage it does.

Mrs. Marland: We are dealing with the volume and we are dealing with it in Ontario. Obviously, if it is more the villain, it is more to be remedied, so if we dealt just with that, we are obviously going to meet with some success.

Mr. Taborek: We are not quarrelling with that. We want to reduce both.

Mr. Holt: The point I would like to make on the sulphur is that if you go back into the mid-1970s, the average sulphur content of the coal Hydro bought in a year was over 2.5 per cent. By 1990, with this program we have, it will be one per cent, so just the effort to reduce the sulphur in the coal we buy will reduce the acid gas emissions by a factor of 2.5.

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Mrs. Marland: By 2.5?

Mr. Taborek: From the 2.5 down to one, before you deal with the decline in the coal burn itself.

Mrs. Marland: I think you had a page I do not have. You were talking about washing the coal somewhere.

Mr. Taborek: That was on the page with the impact of the 1986 control measures. It is on the chart on the bottom right.

Mrs. Marland: I see. That was leading me to my next question. On the portfolio for the mid-1990s, the choices then as now, you mentioned four things. I am wondering what the cost factors are for providing the new clean supply and/or the installation of the emission control technology on the existing plants. What are the ball-park comparisons there?

Mr. Taborek: We do not yet have our plans completed for the new demand-supply options, what are shown as the broad set of alternatives 1. That is the set of work that is going on, and it was before the previous select committee on energy. We are working towards bringing those plans forward at some time in the near future. Basically, that work is not done yet.

The numbers we have quoted a few pages later are for a program where there would be very little in the way of new demand-supply options. Through the 1990s, we were relying on a mostly technology-based program, because it is the kind of thing you would do now. That is where the cost estimates come from.

Mrs. Marland: You are saying you cannot give the cost estimates at this point.

Mr. Taborek: Not for new demand and supply options for the future.

Mrs. Marland: You are also making the statement here that the choices then are the same as now.

Mr. Taborek: Yes.

Mrs. Marland: Now--and when I say "now," I mean up to 1994--if you are looking at cleaner supply and the installation of technology, what is the comparison between those two options?

Mr. Hill: I think the question Mrs. Marland is asking is the difference in cost between the choice of burning low-sulphur fuels versus adding scrubbers. Is that what you are asking?

Mrs. Marland: Yes. Those are two of the four options you have listed in your own presentation.

Mr. Taborek: The choice between using low-sulphur fuels and scrubbers, first of all, depends on how much you use the station. We call it the capacity factor at a station, what percentage of time it is used.

Scrubbers are most economic if you use the station a good deal and have a high capacity factor. We have done some work, and I will quote some typical numbers just to put things into perspective.

Under high capacity factors, scrubbers will remove SO₂ at about \$400 per tonne. But there is a very high capital cost component, and if you should run that station less and you amortize that capital cost over smaller production and hence over a smaller amount of sulphur removed, the cost rises quite quickly up to \$800, \$900 or \$1,000 per tonne.

What you get from that is that a scrubber can be economical when it is put on a station with a high capacity factor. It is about \$400 per tonne of SO₂ removed. It is very uneconomic if you put it on a station with a low capacity factor; whereas low-sulphur coal, if you are paying a premium in the range of 20 per cent to 30 per cent, has a relatively flat cost, and again, take these as representative numbers. It is again about \$400 per tonne, but that fits all capacity factors. So you could use low-sulphur coal in a low-capacity-factor station and still get your \$400 per tonne cost removed.

That is why, if you look at us in a period when our coal burning is declining and our capacity factors are decreasing, we are tending to use a strategy based on low-sulphur coal. We cannot write off the capital over a reasonable enough production to get the cost of it. However, when we go past and the coal-burning capacity factors rise again, then we turn to look at the technology options, again provided what we are judging is the cost of the coal and just how much each station uses.

The interesting thing with our coal stations is that their performance ranges over a wide range of capacity factors. There will always be some that are used very little and there will always be some that are used more. This is one of the reasons we are looking at a range of technologies and a range of low-sulphur fuel options. Basically, we are going to be in a position of fitting and matching.

Mr. Hill: To give the complete answer, we should add that we need more information on the burning of low-sulphur coals. We have more study, work and tests to do on burning low-sulphur coals, the economies of that and the changes we have to make to the upgrading stations for which Mr. Walters is responsible. We do not have the kind of answer today that I think we should have.

Mr. Holt: I think we want to be careful we do not upset Mr. Mazankowski again because one of his concerns is that if we put scrubbers on all our units, then clearly we will buy United States coal and scrub it. That is the cheapest way to do it.

What we have said to the western Canadian coal industry is that there is an economic gap. If they close that gap over time, get the price of their coal relatively close to the cost of US coal and get in a position to provide us with coal at those sorts of costs, starting in the early 1990s--and we believe that is possible--then that is a very viable option to putting scrubbers on a lot of the units and, I believe, a preferred choice in many ways. Scrubbers are not the greatest things in the world to have on an operating thermal plant unit. They create waste.

Furthermore, we have created a very fine system for moving coal from western Canada to eastern Canada, and it would be a shame to see it go away entirely. When we say we have choices, there are a lot of people at work on parts of those choices that might swing it more towards low-sulphur coal or hardware. We do not know the answer to that today, but either will do the job in terms of reducing acid-gas emissions to meet the limit.

Mrs. Marland: It is interesting when you say that scrubbers are not--whatever your words were--the best things in the world to have. As the member for Mississauga South and the Lakeview plant, I will not quote that.

Mr. Holt: That is from the point of operating efficiency at the generating station.

Mrs. Marland: Right. Certainly not for the community.

We are in a situation where we are looking at the cost of the different types of generation for Hydro; we are looking at the cost of different types of operation on the environment; and we are ultimately looking at the cost to the consumer for that very vital service of electricity. I recognize your reply to Mrs. Grier about how uneconomic it would be to put scrubbers on everything that ever burns coal, because you may use only some of those plants 50 per cent of the time.

Mr. Campbell: By 1992, we estimate the Lakeview plant could be shut down completely in summer and could be functioning only about 10 per cent of the time. That is a good example.

Mrs. Marland: By 1992?

Mr. Campbell: Yes. That is when our coal burning will be at its lowest ebb. It will be in that range. You can see why we are reluctant to say we are going to put a scrubber on that plant. It might be much more economical to burn low-sulphur coal for the small amount of time we are going to use the plant.

As the plant starts to burn more coal, then we have to keep weighing that. Sometimes we are compared with US utilities, which are often based on coal. They will build a plant for a base load, which means continuous operation at a coal plant, and put a scrubber on that. They will say: "We have a plant with a scrubber on it. Why do you not build a plant with a scrubber on it?" That is quite different. We use our nuclear and hydraulic plants for that base load and run them all the time. That is when they are most efficient. We use the coal plants for the swings.

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I think it is a good example, the US plants with scrubbers on them are basically running flat out, while we have coal plants that will be used as little as 10 per cent of the time.

Mrs. Marland: The question I was leading up to was, based on those three scenarios, if you were to spend the \$5 billion, which I understand is the figure you need, what difference would that make in my monthly hydro bill by the end of 1987 or whenever? You have already said it takes four years to install them.

Mr. Campbell: The cumulative effect would be about five per cent. Add about five per cent.

Mrs. Marland: Five per cent per annum?

Mr. Campbell: Yes, but that would be cumulative. Once we have spent the \$5 billion and basically have scrubbers on our plants, the net effect you

would feel on your bill at that time would be five per cent. It would not be all in one year. It might be one per cent one year and another one per cent another year, but it would accumulate up to five per cent.

Mrs. Marland: Faced with the information that I am sure your board has discussed a number of times, that the public is willing to pay for the added cost of services, products and commodities in order to preserve the environment, how is it that the board has not made the decision to make the expenditure?

Mr. Campbell: I think we are saying here that we are really committed to meeting those lower emission requirements. We are spending \$7.7 million and we have committed that to doing the environmental assessment on this scrubbing technology. We believe that is a commitment. There is no question in our minds that we will meet those requirements.

We do not want to lock ourselves into saying there will be a type-A scrubber on a type-B plant right now, because it may be better for customers to burn low-sulphur coal, which would accomplish the same thing. If we scrubbed the coal or used low-sulphur coal, I do not think you would notice the difference in your riding in terms of the output of that plant. It would be the same.

Mr. Taborek: Also, it is not a decision one makes all at once. One does not decide today that one is going to spend \$5 billion to 1999. The first decision one makes is actually the \$7.7 million to proceed with the environmental assessment, because one can basically do very little until one has that. That will take us about three years. Having got that in mid-1989, should that come about, then we are in a position to ask, "Shall we build the first two for 1994 or shall we build for low-sulphur coal?" Then you are looking at something like a \$400-million capital decision in mid-1989.

Because growth occurs, and depending on the growth and how the world goes, you are probably looking at \$400-million capital decisions every year for about six years, perhaps with some intervals in between. That is how you get to having spent \$5 billion. You would not decide right now in one shot. It is a process you go into that leads to decisions made in the circumstances of the time and choosing the most economical options at the time. Maybe in one, two or three years, one says, "At this point, we will not go that way; we will go this way." It will change, but that is the way it would happen. It is happening right now. The process is under way.

Mr. Eves: Actually, most of my questions have already been probed by Mrs. Grier and Mrs. Marland, but I do have a couple of questions I would like a few answers to. Did Ontario Hydro request the banking provision in the regulation?

Mr. Campbell: Yes.

Mr. Eves: And did you request five years?

Mr. Campbell: Yes.

Mr. Eves: That was your request and that was acquiesced in by the Ministry of the Environment?

Mr. Campbell: Yes.

Mr. Eves: Did you have any difficulty convincing them that you needed this five-year bank--

Mr. Taborek: Yes.

Mr. Eves: --or were they just overwhelmingly happy to give it? Did they say, "Are you sure you do not want seven or eight or nine," or did they try to convince you to take two or three?

Mr. Campbell: They were very tough negotiators, let me assure you.

Mr. Taborek: Yes.

Mr. Campbell: I have a few scars here somewhere.

Mr. Eves: But you did get what you asked for.

Mr. Taborek: In that one area.

Mr. Campbell: But they actually tightened the screws in terms of the emissions as well at the same time; so we did not get off easy.

Mr. Eves: Apparently, you are banking about 25 per cent of your total emissions.

Mr. Taborek: Yes.

Mr. Eves: One problem I have with this perhaps is the perception, not only in Ontario but also in the United States. I believe US utilities have, maybe not exactly the same system but a similar system where they are allowed to bank if they do not meet with every emission requirement they may have, especially in the Midwest. I remember a few years ago the Ontario Ministry of the Environment and the minister of the day being extremely critical of this procedure in the US. Do you not think it is going to present somewhat of a perception problem for us to try to sell to the Americans?

Mr. Taborek: It is only recently that banking per se was introduced into the United States. The state of Wisconsin has a provision somewhat like ours, but it came after ours, I believe. The American regulations are formulated in a different manner. Our regulation is 250,000 tonnes flat. The more we produce, the more we have to clean. American regulations are in the form of pounds per million BTUs. The more they produce, the more emissions they produce, as long as the rate per unit of production is the same. It is not as effective an environmental regulation as ours.

The American critics are not going to be swayed by facts and logic. There is nothing we can do to persuade them.

Mr. Campbell: Our perception of that is that we have a far better story to tell than the Americans have on acid rain control. We will put ourselves up against an American comparison any day. I do not think any of the Americans have come close to the emission reductions we have achieved. In many cases, in Ohio and so forth, they are using base load coal plants without scrubbers. A lot of them have no intention, so far, of doing anything about that.

We have, on the other hand, agreed to a program that in one way or another will cost us \$5 billion over the next 10 years. That is as much as all the US has committed to. I think our record is tremendous compared to what they are doing.

Mr. Eves: I am not debating that. I am not trying to say their record is better than yours. I think you well know, as everybody in this room does, that certain elements in the United States would use any and every excuse--

Mr. Campbell: Yes, that is right.

Mr. Eves: --or perception possible not to comply or not to reduce their emissions as much as we are trying to do in Canada.

Mr. Campbell: Yes.

Mr. Eves: I am more concerned about the perception than the record with respect to that particular question.

I have a question with respect to the possibility of installing or fitting scrubbers. I take it that to date, and correct me if I am wrong, Ontario Hydro has not really reached a decision about which option it is going to pursue: low-sulphur coal as opposed to fitting scrubbers. Would that be a correct assumption?

Mr. Campbell: That is right. If we are guessing, it would probably be a mixture of those technologies, depending on the plant. I think the committee is visiting our Lakeview plant. As you know, we already have several technologies we are experimenting with on some of those units. We have limestone injection, and we are experimenting with a different type of injection out there as well. You are right in that we have not made up our minds, but we want to be in a position to do it when it is needed.

Mr. Holt: For example, Nanticoke is our biggest station. It has a state-of-the-art blending facility that can use western Canadian coal and it does right now. Whether it would make sense in the longer term also to put scrubbers on those units is a large question. As the chairman said, it is not whether it is low-sulphur coal or scrubbers, it is how much of each goes into the total.

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Mr. Eves: Would you say that Ontario Hydro is proceeding as rapidly as it possibly can to the ultimate installation of scrubbers, if that indeed is the route you chose to go? Is it going to take a full three years for an environmental assessment?

Mr. Hill: We are going to file the document, I think Mr. Taborek said, in January 1988. We have had some projects filed under the Environmental Assessment Act that have passed through very quickly. When Mrs. Grier asked the question a while ago, I was going to say that in actual fact we have passed over 140 projects through the Environmental Assessment Act. That is something a lot of people forget. All of our major transmission and transformer station projects have been approved under that act.

A recent one that the corporation released for construction was a transformer station, and it took four years to get approved. I really cannot answer your question, Mr. Eves. I would like to think that the programming aid for scrubbers, which is a positive step, would be approved in no more than a year.

Mr. Eves: When do you think you would be in a position to make a decision which route or which combination of those two routes you will be going?

Mr. Hill: After the end of 1988.

Mr. Eves: Not before that?

Mr. Hill: I do not think so. There are two objectives. We do not want to equivocate here today. The chairman has clearly stated that we are going to meet the regulation, but we also have another objective of trying to do it in the most economic fashion to the customers. The choice is a very difficult one that is going to commit a large part of our generation for, I would say, another 20 years. It is going to be a very tough economic question.

Mr. Eves: I guess I would appreciate that concern from a business administrative point of view, but I think the concern we have here is obviously the environment and not the economic feasibility. When you talk about five per cent increase in consumer users, do you really think the consumers or users in this province, or anywhere else in Canada, for that matter, would object to a five per cent increase in their bill, be they a large industrial user or a very small, normal household user?

Mr. Hill: No, but as the director of system planning, I have said to committees like this for more than the last 10 years, if I can keep the rate increase at four per cent instead of five per cent, or three per cent instead of five per cent, I will go a heck of a long way to do it. I am still saying that we are not equivocating over our determination to meet the regulation. We will do it as economically as we can.

Mr. Eves: My only comment would be that if the choice is three or four per cent and taking another three or four years longer to do it, as opposed to five or six per cent and getting on with the job now, I do not think there is a choice. We should get on with the job and do it now. I do not think the consumers or the people of Ontario will object.

Mr. Partington: My question may already have been asked, but I want to get back to something Mrs. Marland was talking about earlier. It looks as if about two thirds of the projected 60 per cent target has already been met in the first two years and we have about one third to go in seven years. It would appear from your presentation that much of the target was met by the use of nuclear plants. What percentage of the reduction was accomplished through the nuclear process as opposed to the other?

Mr. Hill: It is in the table.

Mr. Partington: Is it in the table? Where is that? I did not see a table that showed a breakdown.

Mr. Taborek: If you turn to the page entitled Meeting Needs, 1984 to 1986, it shows a demand-supply balance. It actually says it is a 35 per cent reduction in the amount of coal generation.

Mrs. Marland: And the page number?

Mr. Partington: Is it near the beginning?

Mr. Taborek: It is about the middle.

Mr. Partington: I see that.

Mr. Taborek: You will see the drop in coal-fired generation and the rise in nuclear. In the text it mentions that it is a 35 per cent reduction in the amount of coal due to nuclear.

Mr. Partington: What percentage of the reduction was nuclear? It is not 60 per cent. Is it 90 per cent, 95 per cent, 98 per cent, 70 per cent?

Mr. Taborek: It is of that order. I do not have the numbers in my head.

Mr. Partington: It is almost entirely because of the use of nuclear facilities.

Mr. Taborek: Correct.

Mr. Partington: So between 1986 and 1993, when you have to do the 23 per cent further reduction of the 60 per cent, how much of that will be accomplished by the use of nuclear facilities rather than by the other technologies you described and the increased use of low-sulphur coal?

Mr. Taborek: Again, it will be a good deal, but I do not have those numbers at hand.

Mr. Holt: Probably at least two thirds of it, because the main reduction is from lowering coal. The coal is going down 50 per cent from now until 1990. That is really the Darlington units and the Pickering units coming back into service, which will continue to reduce coal by nuclear units through the 1990s.

Mr. Partington: It says, "by the further use of the nuclear facility that we already have." It is just a question of putting it into production.

Mr. Holt: And the new units at Darlington would start to come into service in the late 1980s.

Mr. Partington: To accomplish the targets you have set, will that fully utilize by 1993 the nuclear facilities Ontario has?

Mr. Holt: Yes. When the last Darlington unit comes in at the end of 1992, we are at the very lowest ebb of our coal use. Then it will start gradually increasing, but 1994 is only two years away; so we will not be very high in coal. We will probably be up to only six or seven million tonnes by 1994.

Mr. Partington: Although there is quite a list of options that Ontario Hydro has, the one major option is the nuclear facility. It is interesting that the one item some people are concerned about in the environment is the one solution that is helping us solve the acid rain problem.

Mr. Taborek: That is right.

Mr. Partington: Not being very scientific, does the nitric oxide come from just the fossil fuel use or is it from all fuels?

Mr. Campbell: All fossil fuels.

Mr. Partington: So not the nuclear plant.

Mr. Campbell: Your fireplace produces it; car engines produce it; anything that burns, because it is the nitrogen in the air. Seventy percent of the air is nitrogen. When that is burned, it produces nitric oxide.

Mr. Partington: I have a couple of final questions, and they may go beyond the narrow limits of this investigation. We seem to be targeting 1994, and I read from you that in 1993 or thereabouts the increase in coal is going to be dramatic.

Mr. Campbell: Yes. That is why we have to get into the expensive options. That is why the \$5 billion will be spent in the 1990s.

Mr. Partington: Even with bringing in the options and with the technology you outlined in your brief, is it then going to be a short period before our emissions of sulphur and nitric oxide are going to be what they have been in years past?

Mr. Hill: Yes. If the load grows along the most probably forecast line, which is about 2.5 per cent, the increase in fossil use will more than double between about 1993 and the end of this century.

Mr. Holt: But the emissions will not increase, because we will take them out with the scrubbers and low-sulphur coal.

Mr. Partington: I agree with that, and that was the question. Even with the use of low-sulphur coal and the added technology, there will still be emissions. With the increased quantity, how long will it be before we are back to where we were in 1984?

Mr. Campbell: We will never be back there.

Mr. Holt: We will be staying under the regulations we have.

Mr. Campbell: A scrubber will take out 85 per cent; so even if we go back on the chart to the 1981-82 use of coal when we were at the height of over 500,000 tons, fully scrubbed, presumably on the sulphur side we would have only 15 per cent of the emissions, so we could cut it down greatly.

Mr. Partington: If we increased the use of coal to provide energy--

Mr. Campbell: Of the \$5 billion of technology, we are really talking about retrofitting scrubbers on to existing plants. If we made a decision down the road to go for major new coal plants, even with scrubbers, eventually we would get to that point, as you say.

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Mr. Partington: Whereas in 1993 the decision will have to be whether you continue a nuclear component or whether some other--

Mr. Campbell: We have other options that we are pushing pretty hard. For example, we figure that by the end of the century we will have another

3,000 megawatts--about the size of Darlington--through conservation. We may be able to get another 2,000 to 3,000 by actually paying industries to put in more efficient motors and so forth. We can get one or two Darlington plants out of conservation. That is a lot.

We are negotiating with Quebec and Manitoba for hydraulic purchases. Quebec wants to sell us 2,000 megawatts; that is a good-sized plant. We have those options. Those are the things we will be coming forward with for the consideration of the public and government in the next two years. We talked about it in our supply-demand options study.

Mrs. Grier: Let me follow up on that. I am stunned you have not gone as far as suggesting that we build another nuclear plant and that we would then not have any acid gas at all.

Mr. Campbell: Not today.

Mr. Hill: Would you support that?

Mrs. Grier: What I find so frustrating about all your emphasis on the least-cost technology and everything is that nowhere in any of these costs--even though we have explored this before--is any cost attributed to the disposal of the ultimate environmental hazard, the nuclear waste. You keep saying it is cheaper to switch to nuclear but you totally ignore that whole aspect of it. But we had eight months on that and I do not want to back to it.

Perhaps you can supply to the committee--not today, but during the course of the next week or so--some breakdown of the \$5 billion you estimate you will have spent by the end of the 1990s on retrofitting. What is the basis of the estimates of the cost of scrubbers and the costs for plants that you are using to arrive at that \$5 billion?

Mr. Taborek: I have brought those along.

Mrs. Grier: You just happen to have them.

Mr. Taborek: I thought you just might be interested in them.

Mr. Campbell: If I can add one thing, we are not suggesting new nuclear plants. When we compare costs of nuclear plants with coal-fired plants and others and say the nuclear has a saving of about 30 per cent, that includes the cost of the disposal of the fuel.

Mrs. Grier: You mentioned that there was no available technology to control NO_x.

Mr. Campbell: We can reduce it by 35 per cent, but that is about it.

Mrs. Grier: Part of what we are asking Inco, Falconbridge and all the others to do is to develop the technology to control their emissions. I am wondering what plans you have, as part of this program, to develop technology to control that emission.

Mr. Taborek: At any point--maybe I should defer to Joe Walters. I am sorry.

Mr. Hill: Make him earn his salary.

Mr. Walters: In fact, the NO_x represents something like 12 per cent of our emissions. Using the conventional furnaces we have right now, which is what we are doing at Nanticoke, we can reduce it to about 300 to 400 parts per million. Using conventional burning, no method has been found of getting it to a lower level, of absorbing that which is produced, at this time.

Mrs. Grier: What research are you doing?

Mr. Walters: What is going on--and this is for new boilers in the future--is the development of such things as the fluidized-bed combustion boilers. These are probably 20 years away in terms of being applied, but they have the prospect of reducing it to a very low level, maybe 50 parts per million.

Mrs. Grier: You do not anticipate developing any technology in the course of meeting these controls that will help you to control the NO_x in the existing plants?

Mr. Walters: At this time, the technology that can do it is not known. There is experimentation going on in the US and Japan. We are watching that very closely.

Mrs. Grier: But you are not doing any yourselves.

Mr. Walters: Not at this time.

Mr. Taborek: We are working on the low- NO_x burners at this time. What has been fitted at Nanticoke is a hydro development.

Mrs. Grier: Right, I realize that, but it is the last bit that is always the hardest to get.

Mr. Campbell: There are some people who have developed ultraviolet lights--high-intensity, like sunlight--and ammonia. Every few months we read about somebody who has made a breakthrough in this. It is sort of like the fellow who has invented the carburetor that will give you 100 miles to the gallon, but you never hear about it after that.

We have actually done some experiments with that and we have put some money into it. There are some theoretical processes that work in the laboratory, but the problem so far has been in translating them into a big production plant where you get a lot of smoke, dust and grit. Nobody has really solved that problem.

Mrs. Grier: In reply to Mr. Partington's questions, you agreed that the nuclear substitution was the large element in the reduction that you have done so far. The factors that have made it possible for you to do that--the coming on stream of additional units and the anticipated production at Darlington--were all in the works before Countdown Acid Rain. What have you done differently since December 1985 that you would not have done if Countdown Acid Rain had not been released?

Mr. Taborek: We had, if you will, a warning in 1981 when the first regulation to put a limit on us in 1986 and 1990 came into place. We basically began our program in 1981. What Countdown Acid Rain did in 1985 was to further lower 1986 and 1990 and to put a new limit in 1994. You are quite right; we recognized and we planned for use of existing measures wherever possible to do two jobs at once; that is, to use the nuclear plants. That is one of the reasons we are doing it economically now.

At that time we also launched the low-NO_x burner program; it gave direction to our program in coal sulphur levels. At that time we began to develop our thinking on scrubbers and the use of scrubbers. We have launched the program environmental assessment--

Interjection.

Mr. Taborek: As a matter of fact, Countdown Acid Rain caused us to move it forward two years. Because of the capital cost, one of the things we really need is a low capital cost scrubber, so we launched the program at Lakeview on limestone injection. We have done both tangential-fired boilers and are just about to start on the wall-fired boilers. I think that is sort of it up until now.

Mrs. Marland: When we sit here and listen to the questions and the answers, I do not think there is anyone in this room who does not understand the complexity of the challenge that is in front of you. There certainly is not anybody in this room who does not understand the need for electricity, but I must say I have never heard or seen figures about the cost of safe storage or disposal, or both, of nuclear waste versus the costs of the programs that we have been talking about this afternoon.

Three or four months after the Chernobyl accident--I did not know anything about the Candu reactor--I took a television crew to Darlington and spent nine hours there. I came away with a public information program to which I have had a tremendous amount of positive response. I have not formally thanked Ontario Hydro or even individually the--and I am struggling; I think it was Dave Williams from University Avenue who was with me. Is that the right name?

Mr. Campbell: Mike Williams.

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Mrs. Marland: Anyway, that afternoon I thought it was very difficult to win all the way around in terms of the environment, the provision of the service and the economies of protecting the environment and providing the service.

I have to get back to the question of if I were you and were thwarted all the time by the frustrations you must have and the delicate balance of pleasing those people who do not want any more Candu reactors and those who say, "Let us use coal but do not pollute the air while we do it." Have you ever conducted a customer survey around the province on a broad base? The local commissions mail out envelopes monthly. You have a captive audience in terms of conducting a survey.

This committee is here to discuss acid rain. Look at where we are today with the costs of acid rain. We have not even begun to talk about the real costs, which we know exist, namely, the real costs to human health. If we have looked purely at the costs to the natural sciences, it is going to be very interesting when we start to look at the real costs to human health.

There has to be a time when you as a board turn around and say, "All right, Mr. Consumer, here is the dilemma we are faced with." I think a comment was made earlier about looking at a five per cent increase in rates, your comment about whether you can keep the rates to three or four per cent rather than five per cent. The difference of one or two per cent is nothing in terms

of human health and when we look at the overall effect on tourism. You know the list of things affected by acid rain. Why are you not saying to the consumer, "All right, these are the facts; we are trying to make the best decisions all around," but turn it back to the consumer and let him decide for you?

Mr. Campbell: I appreciate those comments. Those are good suggestions. We have had a lot of public consultation and are going to do more of the kind of thing you are talking about.

Mrs. Marland: In what form have you had it? Have you had it as broad-based as the billing?

Mr. Campbell: We have not used that. For example, we must have had a total of about 50 or 60 meetings in communities around Ontario in the last three years. I and various people in our organization have been at some of them, meeting a cross-section of the people in the community to discuss these very issues. We intend to do more of that. When our supply-demand study comes out, it will be broadly circulated, and we will be having a lot of those public consultations.

Your idea of using the billing envelopes for a survey is something we should probably look at. It is a good suggestion.

Mrs. Marland: Who used the billing envelopes about the transmission lines?

Mr. Campbell: Many of the utilities themselves did that. We are the producers and wholesalers and they are the retailers. They were concerned that delays in the transmission were adding to their and their customers' costs. They were getting upset about that and wanted to get that message out to their direct customers. We did not do that.

Mrs. Grier: Unsolicited support.

Mr. Campbell: We would never orchestrate anything like that.

Mrs. Marland: Most of our discussion this afternoon is about the next 10 years. We have a tremendous responsibility, as do you, but we share your responsibility and I want to be quite clear about that. As representatives of the public, we share your responsibility, but the public also shares the responsibility for living in the 20th century with the 20th century technology that is available.

I think we underestimate the public when we assume people would not want to protect the environment. Look at the number of organizations and the numbers of people within and without those organizations around this province who are very well informed about acid rain. They are very well informed about the damage to the environment. If we went back 10 years, we would probably find very few people in comparison to the numbers today. I think we underestimate the public by assuming people do not want to look beyond 10 years into the future. I think people would like the opportunity of saying that at least they did something for their grandchildren and their great-grandchildren; maybe that something is paying more for a public utility we cannot do without today.

Since you have obviously struggled to please everybody on every side, and that has come out in some of your answers this afternoon, I think it is

time it is no longer an issue of whether it is nuclear or coal or whether it is scrubbers or not. I think it is an issue of saying to the public: "Look, we can do anything, if you are willing to pay for it. Do you want to?"

In my humble opinion, when we are looking at one commodity that we cannot regain, reinstate or bring back in terms of natural science and at another commodity, human health, then there is no price that is too great to pay. When this committee gets into the details of what is available in terms of the study of the impact of acid rain on human health, which I hope it will, I think we will see it as a very clear responsibility that we have. Otherwise, we are going to be spending the money on the health care system in this province. Either way, the public will be spending money.

I know it is late, but I have one other question about the banking.

Mr. Chairman: We are getting right down to the very last question.

Mrs. Marland: I guess I have tremendous difficulty with the banking system. I know that there have been several questions about it this afternoon, but from what you said, I gather the credit manager at the bank is the cabinet.

Mr. Campbell: They are tough.

Mrs. Marland: They may be tough, but how tough would they be if we got into a crisis situation where we were literally faced with brownouts because there was downtime in some of our equipment and there was not necessarily a tremendous increase in demand, but enough of an increase in demand and enough downtime in equipment that we had to have a little overdraft at the bank? I do not agree with the concept of banking, but--

Mr. Taborek: Whose fault would it have been that this happened?

Mrs. Marland: If there was a downtime that had not been planned for provisionally by Hydro, because nobody else can plan for it--nobody else has the knowledge--I would suggest it would be the fault of Hydro.

Mr. Taborek: There could be some that would be Hydro's fault, but suppose it were, say, a booming economy?

Mrs. Marland: A booming economy means you are putting into the ground plant that needs electricity: houses, factories and office buildings. A booming economy does not happen overnight. That is another thing. I am amazed when I see in your brief that you do not plan beyond 10 years. I was not going to get into that, but under the heading "New Demand/Supply Options" you say, "The electricity system now in place or under construction in Ontario will provide for people's electricity needs until about 1997 if conditions develop as now forecast, but only to about 1993 if electricity need is higher."

From this I read that at the greatest you have a 10-year plan. At worst you have a six-year plan. I guess that surprised me.

Mr. Campbell: To put it in context, we are not saying we would run out of power in those years; what we are saying is that our present plans for the plants that we have in service would take us to then. We have mothballed plants that we could bring back in service that would get us beyond that stage. For example, we have the Hearn plant which can be fuelled with natural gas. We have some contingencies there.

Our planning is much more than that. We are looking 20 years and beyond. In fact, we have sometimes been criticized from some quarters for having too many plants like this in reserve and on stream. What we try to do is to find the balance. What we are saying is that we are looking at those options and in the next couple of years we are going to have to come forward with exactly what you are saying: What happens after the mid-1990s? Where do we go and what options do we face?

There was one thing I wanted to mention. You said earlier that the public would support us in spending more to reduce acid gas, and I appreciate that support. I agree with that and we agree with that.

Mrs. Marland: Would you agree to asking them?

Mr. Campbell: We have done surveys. We have not done it in the way you suggested, but we had surveys done and we tabled the numbers with the select committee on energy. In fact, I think the select committee commissioned some studies as well, by Goldfarb, if I recall. Did they not?

Mrs. Grier: There were some submitted, but they were certainly not commissioned by the select committee.

Mr. Campbell: Okay, but we had some and there is strong public support.

Mrs. Marland: Yes, because those surveys--I mean, whatever company you use it is usually 1,000 people. How many customers do you have?

Mr. Campbell: I guess we have about 300,000 homes.

Mrs. Marland: Just homes?

Mr. Campbell: That is not including businesses. I was going to say that we know our customers would support the fight against acid rain and they would pay more money for it. I think what we have to keep in context here is that Ontario Hydro contributes from two per cent to four per cent of the acid rain in Ontario and we are proposing to spend \$5 billion in the next 10 years to reduce that percentage.

The requirements that are put on us are the toughest in North America, probably the toughest anywhere. I think we agree there are problems that have to be dealt with, but I think we have a good story to tell. I do not think Ontario and Ontario Hydro have to take a back seat to anybody in saying we have the toughest requirements on us of any utility. We are reading them. We are prepared to spend billions of dollars on them, and even then you have to keep in mind--I am not saying it is not important--that is only dealing with two per cent to four per cent of the acid rain problem in Ontario. That is a lot of money to spend.

Mrs. Marland: Yesterday afternoon, Inco told us what percentage it was. The point is, first ask the public. I will be interested and I look forward to the answer that you get by surveying all your customers, but everybody contributes a percentage. Where we lose is where, if we do not do the maximum that we can do or that the public in your case wants you to do, we have no ammunition when we ask the other 50 per cent contributor, the other side of the border.

That is what we need. We do not want to be down in the United States saying, "Look what you are doing to us," when they will turn around and say, "Look what you are doing to yourselves."

Mr. Chairman: I think that is a good point to end on. We are looking forward to having Ontario Hydro back on March 11, and I am sure that if you have other questions, we might place them to Ontario Hydro at that time. Mr. Campbell, I want to thank you and your colleagues Mr. Taborek, Mr. Holt, Mr. Walters and Mr. Hill very much for being here.

For those members of the committee who are still here, on Tuesday we are going to Lakeview, in the riding of Mississauga South. I just wanted to tell you we are to be there at 9:30 a.m. If you require transportation, there is a bus departing from here at 8:45 a.m.

The committee adjourned at 4:35 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

TEST FLIGHTS

TUESDAY, MARCH 3, 1987



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

McLean, A. K. (Simcoe East PC) for Mr. Eves
Morin-Strom, K. (Sault Ste. Marie NDP) for Mrs. Grier
Wildman, B. (Algoma NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Also taking part:

Harris, M. D. (Nipissing PC)

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Tuesday, March 3, 1987

The committee met at 2:10 p.m. in committee room 2.

TEST FLIGHTS OVER NORTHERN ONTARIO
(continued)

Mr. Chairman: We are going to resume a discussion on Mr. Morin-Strom's resolution with respect to the low-level training route over northern Ontario.

I was not able to be at the meeting last Thursday. I wish I had been able to be here, but I must commend Mr. Miller, who chaired it in my absence and was able to keep the discussion running smoothly and rolling right along.

As I recall from watching the proceedings, the committee suggested to the Ministry of the Environment that it request whatever information it could from the Department of National Defence. I have a letter from the ministry, and our researcher has copies and will be passing them out. Everybody can read it, but I should read it into the record. It is addressed to myself.

"Dear Mr. Knight:

"In order to assist the committee in its deliberations in the matter of the test flight path in northern Ontario, it has been arranged to have the Department of National Defence submit all the relevant documentation directly to you. They have been advised that the committee will be discussing this matter in the afternoon of Tuesday, March 3, 1987."

This letter was sent to me by J. Walter Giles, the associate deputy minister in MOE.

We received this morning through the Department of National Defence's fax system a briefing package which our researcher is also providing the committee. With your leave, so you will have an opportunity to digest the information, I will read it into the record; either that, or we will take a few minutes to read it over. For the benefit of everybody, I will read it out, because it is not that long. It is entitled Low-Level Training Route IR 610.

"A low-level training air route was established in 1968 in northern Ontario for use by the United States Air Force Strategic Air Command. The route was used for approximately 17 years without either a noticeable concern expressed by interest groups or resistance from local residents. The route is designated as Instrument Route (IR) 610 and runs from North Bay to the eastern shore of Lake Superior.

"In 1986, the requirement for the continued use of this route was recognized, although it had not been flown in the previous two years, and Transport Canada agreed that this route would be used for Strategic Air Command training as of February 12, 1987. Aircraft using the route will continue to be the B-52 and the F-111.

"IR 610 runs from the North Bay area to the east shore of Lake Superior, a distance of approximately 350 nautical miles. The planes fly at levels from a maximum of 21,000 feet to a minimum of 400 feet above ground level. The route is designed to avoid populated areas.

"Thorough negotiations with Transport Canada for confirmation of the continued use of this route have been completed. Transport Canada has advised the flying community that Strategic Air Command will conduct low-level training flight operations on IR 610 as of February 12, 1987.

"In the interests of flight safety, both civilian and military airmen were alerted to the flights along the route through Transport Canada. Notification and a route description of IR 610 is contained in the February 12, 1987, amendments to Transport Canada's Aeronautical Information Publication and the Transport Canada/Department of National Defence Flight Information Publication.

"IR 610 is a training route which is only meant to enhance the low-level flying capability of aircrew. Norad involvement in this particular route is not expected nor is it connected with the United States's cruise missile or bomber testing.

"Neither Transport Canada nor the Department of National Defence has on record complaints from individuals during previous training exercises. Both the B-52 and the F-111 aircraft that will be used in these training flights have been used in the same area in the past without repercussion. DND takes seriously its responsibility to the environment and will monitor route IR 610 to ensure environmental concerns are addressed.

"Bomber forces of the US Strategic Air Command provide a significant and essential portion of the allied deterrent force. Credibility of the deterrent increases with proficiency of the aircrews. The modernization of the Soviet defence force has raised the requirement for low-level flying in order to better ensure survivability of allied aircraft.

"Canada benefits from the protection afforded by this deterrent and, therefore, as an alliance partner, permits use of Canadian air space for training. Should there be any problems concerning route IR 610, DND staffs are more than willing to take into consideration any realistic and substantiated concerns."

That is the documentation provided by DND. I thought it perhaps would be important to the committee that it have some further background information so it would have some basis upon which it could discuss the matter this afternoon. As the committee is well aware, we had a prior scheduling of the committee's business. Not taking away from the importance of this issue, the longer the committee deliberates on this issue, the more time we are going to be taking away from our acid rain deliberations.

I recall that when the committee first organized, there was a prioritizing of the issues it should discuss. We took four or five issues, and there was general consensus that the next issue we would discuss was going to be the Niagara River toxic waste management. Although this is a worthy issue for us to debate, it is within the federal jurisdiction. I am not suggesting this committee could not make some very worthy recommendations. Let us have a full discussion on it, but keep in mind that we should come to an early resolution.

To direct the committee, I have asked our researcher to provide a full background document, including some potential recommendations the committee might like to discuss. I guess it has been passed out to the members of the committee.

With that preamble, I open it to the committee.

Mr. Wildman: On a point of order: While I understand your concern with the schedule of the committee, and I am sure no one here would debate the importance of the acid rain issue and the importance it has for my riding and all of Algoma and northern Ontario, I am looking at the resolution introduced by my colleague Mr. Morin-Strom, and if this is the response of the ministry, in my view, we have been snubbed.

To have a one-paragraph answer on this issue from the associate deputy minister of the Environment with a memo from the Department of National Defence appended in no way responds to the request of this committee as proposed by my colleague. I refer you specifically to the fact that this committee requested the Ministry of the Environment to provide the committee with copies of the internal environmental evaluation prepared by the US Strategic Air Command and copies of the provincial responses to the proposed low-level bombing test flights planned over northern Ontario, along with information on consultation amongst Ontario and the United States Air Force, the Department of National Defence and the federal government.

If that is the response we have had, it is completely inadequate. The appended note by the Department of National Defence, which points out that these flights are a resumption of flights that took place after 1968 and notes that the flights went on for 17 years without noticeable concern, in no way responds to the concerns that have been raised in this committee by my colleague and that have been raised by a number of groups in northern Ontario and across this province about the fact that it appears there have not been any environmental impact analyses done of these flights.

The fact that this memo even states that these flights will resume on February 12, frankly, is inaccurate. They have not resumed as yet. This is not an adequate response. I wonder if the committee is prepared to accept this kind of response from the provincial ministry that is responsible for the environment as a genuine concern about the environmental impacts.

1420

I fail to see why on new proposed flights by the United States Air Force in western Canada detailed environmental impact studies should have been carried out, but on the resumption of flights that have taken place in northern Ontario in the past, there is no such analysis and there is not even any indication in the memo from the Department of National Defence that in 1968, or whenever these earlier flights began, any environmental impact study was done.

It says there have been no concerns raised. It is kind of hard for a moose to raise concerns. I would like to know what analysis was done about the effects on the wildlife in my riding. It appears nothing has been done. I would like to know whether this committee considers this an adequate response.

Mr. Chairman: It may be appropriate for us to have our researcher explain or walk us through his report, but without pre-empting the information

which I have gleaned from it, it appears that the reason is it is a resumption of a route. The point you make as to why, back when it was originally set up as a route, they did not have environmental impact assessments done is certainly a concern I share. However, since they have considered it as a resumption, my understanding from the information available is that DND, Environment Canada, the federal people, did not consult with the provincial authorities. That is the reason the provincial authorities have nothing they can supply us with as to a response, because it was not thought necessary on the part of the federal government.

Mr. Wildman: I understand what you are saying, but the problem with that is that it means there has not been any proper environmental impact studies done. It also ignores the fact that last year the assembly passed a resolution which has direct impact on these flights. It would seem to me that it would be incumbent upon a provincial jurisdiction, where the Legislative Assembly has expressed a view with regard to equipment used or tested that is related to nuclear defence, it should be consulted.

Mrs. Marland: Can you identify the resolution that was referred to?

Mr. Wildman: The resolution of the assembly that was passed last fall indicated that the assembly wished to prohibit the testing of nuclear weaponry or equipment associated with nuclear weapons in this province, or the transport of those weapons or the equipment associated with those weapons through this province.

Mrs. Marland: I just wanted you to identify for me the resolution which I thought you were referring to. On a point of order: That resolution dealt with Ontario being a nuclear arms free zone. These flights are unarmed and they are not relative to nuclear arms.

Mr. Wildman: There is no question that the US Air Force has said that these flights will be unarmed, but I am sure the resolution--perhaps the clerk can dig up that resolution and read it to us--deals not only with nuclear weapons but also with equipment associated with nuclear weapons, and certainly a B-52 bomber is associated with nuclear weapons. It can carry conventional bombs and it also can carry nuclear bombs. It is designed in the current defence strategy to carry nuclear weaponry.

Mr. Chairman: On the point of order, it really is a point of information and I guess it is a point of information from both points of view, although the committee will have to decide whether it wishes to pursue it. It really is just a point of information.

Mr. Wildman: What I am saying is there are two aspects. There is the aspect that is central to this committee, which is the environmental impact and which I and my colleagues are very concerned about, but then there is the wider question of whether a provincial jurisdiction should be consulted by the federal government when an ally requests permission to test associated nuclear technology in this province. It is obvious that this province and this provincial government were not consulted. I think it is strange that this province would not be consulted when Saskatchewan, Alberta, the Northwest Territories and so on are consulted when there are flights proposed out west.

It would seem to me that the people of northern Ontario are just as important as the people of northern Saskatchewan, Alberta or the Northwest Territories, and the wildlife and the effects on the environment in northern

Ontario is just as important as the effects on the environment in other parts of northern Canada.

Mrs. Marland: My comments in supporting Mr. Morin-Strom's initial presentation of his resolution, which I think was on Wednesday morning at 10 o'clock, and my comments on Thursday afternoon as we continued the discussion of his resolution were in support of dealing with his resolution as long as when we got the information back it was within the purview of the matter before this committee at the moment, which is the matter of acid rain.

With respect to Mr. Wildman, the purview of whether these flights are counter to the resolution of the Legislative Assembly last year vis-à-vis a nuclear arms free zone is not a matter for this committee to discuss. It may be a matter of concern to him, but with respect, I have to suggest to him that he would have to take that concern to another committee.

As Mr. Neufeld has not taken us through his research, I would like to reserve my comments until he does. After we hear what the research reveals, then I think this committee will be in a position to continue either to discuss Mr. Morin-Strom's motion, because it is relevant to acid rain, or not. That is the only reason I agreed to deal with the motion. Both times I spoke last week I said I wanted to dissociate myself from the subjects that were being brought in, such as nuclear arms and that whole matter. I think it is grossly unfair to tie nuclear arms into it, as a matter of fact, because it is as logical as saying B-52s can carry nuclear arms.

I am not sure what armament F-111s carry. Not every aircraft is equipped to carry nuclear arms. I do not know which are. Unless there is somebody here who is an authority on the kind of armament these two particular types of aircraft carry, I am not interested in discussing it, because somebody has to tell us whether it is so.

I think the discussion can really get off the tracks and be totally irregular to the matter that we as an all-party committee have committed to deal with, that being acid rain.

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Mr. Chairman: Is it the consensus of the committee to let Mr. Neufeld proceed through the report?

Mrs. Marland: Yes.

Mr. Neufeld: The following requested information on low-level US military flights which had been approved for northern Ontario was compiled, for the most part, without the benefit of written materials. It is based primarily on telephone conversations with federal officials.

The northern Ontario corridor was requested by the US Strategic Air Command in May 1968. Approval of the corridor was authorized by the federal Department of National Defence in December of that year. The corridor was flown by US aircraft until early 1985, after which time it was deactivated by the Canadian government because of low usage.

Statistics on the actual number and frequency of flights are not available. However, flights did not occur more than five times per day and frequently a full month would pass without a flight.

Mr. Wildman: Excuse me. This is on the main east-west air route between Toronto and Winnipeg and Toronto and Vancouver?

Mr. Neufeld: I am referring to the approved northern Ontario flight corridor for US military flights.

Mr. Wildman: Yes. The west end of the corridor is on the main commercial air route from eastern Canada to western Canada.

Mr. Neufeld: I am not familiar with that. There is a map attached which may provide light on that question.

The US Strategic Air Command requested reactivation of the corridor in January 1986 and Canadian approval for reactivation was given effective February 20 of this year. The corridor was re flown by US Strategic Air Command and Canadian Forces planes to reconfirm that the corridor traversed a relatively unpopulated area.

The flight corridor appears to traverse the length of Lady Evelyn-Smoothwater Provincial Park, a wilderness park established in 1983, and across the southern portion of Lake Superior Provincial Park, a natural environment park established in 1950. These have been superimposed on the attached map for your reference.

The conservation and environment branch of DND is developing a proposal for monitoring the potential impacts of flights along the northern Ontario corridor. If approved, the monitoring project would likely use the services of a private consultant to co-ordinate the undertaking. Informal consultation with the Ontario Ministry of the Environment and regional federal officials is likely.

The US Strategic Air Command had the following notification procedure for flights along the northern route. Every Thursday prior the following week's flights, the US Strategic Air Command sends a teletype regarding the planned flights to four Canadian locations: the Department of National Defence in Ottawa; the Toronto air control centre, Transport Canada; the Canadian Forces Base North Bay, and the North Bay control unit, Transport Canada.

Canadian Forces administrative order 36-50 outlines DND's policy and responsibilities for environmental protection. I have attached that to the memo for your reference. It is presently undergoing internal review. Projects and activities which satisfactorily comply with current environmental acts and regulations as well as the exemption criteria listed in annex C are not analysed for further environmental impact. Where all exemption criteria are not satisfied, an environmental questionnaire, located in annex D, is completed. If the completed questionnaire reveals that there is likely to be an adverse environmental impact, an initial environmental evaluation is carried out. Where a major environmental impact is anticipated, an environmental impact statement may then be prepared by the sponsor of the project or exercise and National Defence headquarters. Final decision for implementation of the activity will rest at the federal ministerial level.

Initial environmental evaluations have been completed for the proposal to conduct low-level flights by NATO forces in Goose Bay, Labrador, in 1981, as well as for the proposal to conduct air-launch cruise missile flight tests in northern and western Canada. That was completed in 1983. An environmental impact assessment for the Goose Bay project is currently under way. In addition, an initial environmental evaluation is being conducted for two proposed low-level military flight routes in northern and western Canada.

In terms of consultation procedures for new flight corridors, there is no administrative requirement to consult with provincial governments in establishing new flight corridors, but DND has adopted the following informal measures. DND informs the federal Department of the Environment of a proposed new corridor. The federal Department of the Environment then contacts the environment departments of the affected provinces. The draft initial environmental evaluation is sent to participating provincial departments and final copies of the initial environmental evaluation, incorporating any changes, are circulated to participating government departments. The final decision authorizing the corridor is made by the Minister of National Defence.

Mr. Morin-Strom: None of those notifications has occurred in Ontario.

Mr. Neufeld: I think these procedures were developed after the administrative order that is attached. I believe they were promulgated in 1977. The administrative structure to implement them was set up in 1982.

Mrs. Marland: Paragraphs 3 and 4 on page 3 have not been complied with then, according to what the Ministry of the Environment has told us?

Mr. Neufeld: This is an informal working policy that the Department of National Defence applies to new flight corridors.

Mr. Morin-Strom: In other words, environmental concerns over existing flight corridors or reactivated flight corridors are of no consequence and there is no real, serious environmental concern being exhibited whatsoever. It is really a policy matter. If it is new, they will do something; if it is not, they will not. There obviously cannot be any environmental concern.

Mr. Neufeld: For clarification, on page 2, the top paragraph states that the Department of National Defence is developing an environmental monitoring program for the northern Ontario corridor. This has not yet been approved. It is an internal process that has been forwarded, I think, to the appropriate authorities for approval and funding. That is their response to concerns expressed about the environment.

Mr. Wildman: It may not be fair to have the committee researcher answer this question; it would be preferable to have someone from the provincial government and/or the federal government here. As a matter of clarification, if I look at the information you have given us, on page 2, with regard to Goose Bay, Labrador, my understanding is that there have been flights carried on by the British air force and the West German air force for some time in that area and that it is only as a result of the perceived need by NATO to step up the number of flights and the concerns expressed by the Indian people in Labrador that the environmental impact studies are now being carried out in that area. It would be an interesting legal question as to whether those are in fact new flight corridors or a continuation of low-level flights that have been taking place over Labrador for some time.

Mr. Chairman: Our researcher has an in-depth knowledge, but perhaps not to the depth you may be asking him to provide information. However, I am sure if he has it, he will provide you with it as we carry on.

Mr. Morin-Strom: In terms of in-depth knowledge, we should point out that our researcher has more knowledge than the whole Ministry of the Environment and DND as evidenced by the amount of information both of them have provided us.

Mr. Chairman: In the interests of fairness, I think it should be indicated that he has this in-depth knowledge because of the contact he made with DND and the federal government, whereas the regular consultative process normally is for the federal government to make contact with the provincial government, which it did not.

Mr. Wildman: Yes, that is true.

Mr. Neufeld: I have a copy of a letter written to the federal Minister of the Environment from the federal Minister of National Defence, dated February 13, 1986. He refers to the decision to go ahead with a full-scale environmental assessment. The letter states: "As you are aware, the Department of National Defence is sponsoring military flying activities by some of our NATO allies in Goose Bay, Labrador. This has been ongoing for some time now. Recently, these allies have requested that new tactical ranges be provided as part of this activity. In addition, NATO is seeking a site for a tactical fighter weapons training centre that could start operations in the early 1990s. Goose Bay is a candidate for the centre."

It appears from this letter that they are interested in expanding or creating new tactical ranges and establishing a site for a tactical fighter weapons training centre in Goose Bay, Labrador.

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Mr. Wildman: The date on that letter was February 13?

Mr. Neufeld: The date on this letter I am quoting from is February 13, 1986.

Mr. Wildman: It is 1986. Okay.

Mr. Neufeld: For the committee's benefit, I could run through the possible recommendations, which are certainly open for discussion or are simply here to provide ideas and guidance.

First, because of concerns about the flight corridor traversing two provincial parks, I suggest the placement of the flight corridor should be re-evaluated.

Second, because of the need for input from the Ontario ministries of the Environment and Natural Resources in evaluating the potential impacts of low-level flights, these ministries should be directly involved in the development and implementation of the monitoring system for the northern Ontario corridor.

Third, prior to expanded use of this or any other flight corridors over Ontario, the Ontario ministries of the Environment and Natural Resources should both be consulted.

Finally, the province of Ontario should be added to the list of government bodies given prior notification of scheduled low-level flights.

Mr. Morin-Strom: I point out that our research assistant has been able to provide us with more information than the whole Ministry of the Environment here in the province or our Department of National Defence. I do not contend that the Department of National Defence knows less than our researcher. However, I do note that our Associate Deputy Minister of the

Environment indicated to us that it has been arranged to have the Department of National Defence submit all relevant documentation directly to us. Certainly, this document cannot be all the relevant documentation when we have received more information from our researcher through indirect means than directly from the Department of National Defence or from the Ministry of the Environment here in the province.

The response to this concern that we have been getting has been grossly inadequate. Our government here in the province is showing no interest whatever in this matter. It is being completely irresponsible in terms of what the Ministry of the Environment should be doing in protecting our environment and acting on environmental concerns that have been raised by residents of northern Ontario.

I do not understand why we are in a situation where environmental concerns are being addressed in other regions of this country and the same environmental concerns are being ignored here in Ontario with the excuse that these routes were approved back in 1968, and despite the fact that no environmental study has been done since that time and that these routes have not been used for a period of at least two years at this point--

Mr. Wildman: They were used only infrequently before that.

Mr. Morin-Strom: --that is not a justification for avoiding addressing the matter of the environment.

Here in the province we see the detailed route is going directly over two of our major provincial parks, the recently established Lady Evelyn-Smoothwater Provincial Park and the long-established Lake Superior Provincial Park. That is totally inappropriate. We have to take action to see that these flight paths do not cross those provincial parks and that complete environmental assessments are done over the complete flight route as it crosses northern Ontario.

I would like to suggest as well that, again, we are not getting as much information as is available. The Department of National Defence is not indicating what the history of those flights was, how frequent they were and what types of planes were involved, how many and, in particular, what elevations were involved all along the flight path.

I am concerned about the indications that the current flights are testing new equipment which is designed for these bombers to be able to fly at lower altitudes than they have in the past. Yesterday I received information from a Michigan press reporter who indicated that he had talked to US Air Force Major Fred Harrup, from SAC in Omaha, Nebraska, who indicated that these routes in northern Ontario, which he confirmed were routes such as route IR610, routes in northern Ontario, would be flown by Strategic Air Command bombers from the states of New York, Maine and New Hampshire, and that the rationale being used in the US for wanting to fly a route in northern Ontario was that weather conditions are prohibitive at certain times of the year in the eastern United States on the routes they have there.

He also indicated that their intention was to fly these flights at altitudes as low as 200 feet, not 300 feet. The range I have now heard is the range of 200 to 500 feet in altitude, and you are talking about a plane that is 200 feet across itself. You have trees in this area which are over 100 feet in height and you have many hills which are in the order of 1,000 feet in height. To have planes of this size trying to hug territory at those

elevations is something that has to be of grave concern to us, and I think it is very likely a change in practice from that of previous flights.

I would like the committee to insist that Ontario take an active part in seeing that an environmental study is done on the impact of low-level bomber flights in northern Ontario. I would like to see the committee ask the Ministry of the Environment to conduct a complete environmental impact study in consultation with the federal government and that we strongly request the Department of National Defence to put a hold on all such low-level flights across northern Ontario until such a study has been completed and the impacts are subject to full public scrutiny.

Mr. Chairman: I have Mr. Partington next, but Mr. Neufeld has a point of information on one matter you raised.

Mr. Neufeld: Just to clarify the question of flight elevations, I was talking this afternoon to an individual at the Toronto area control centre of Transport Canada, and I will refer you to map which is the page following my three-page memo. On that map, if you can find Ville Marie, which is exactly east of the park, and you follow the flight path southwest to the second point there, at 47 degrees, nine minutes, 80 degrees, three minutes, at that point--

Interjections.

Mr. Neufeld: Have you been able to find that?

Mr. Wildman: In the park?

Mr. Neufeld: No. It is just the point southeast of that: 47° 09' north and 80° 03' west.

It is at that point at which the low-level portion can begin. This is continuing in a westerly direction. Prior to that, the approved altitudes are 3,500 feet, I think. At that point, the low-level portion can begin along the full length of the route. When visual flight rule weather conditions permit, they have approval to fly as low as 400 feet above ground level. You have to consider tree height to calculate the distance between the tree height and the planes. That is what has been approved.

Mr. Wildman: Are those elevations of 400 feet and 3,500 feet elevations above sea level or are they the levels at which the planes are to fly?

Mrs. Marland: It says "ASL," which means above sea level.

Mr. Wildman: Okay. If those are above sea level altitudes, then you are talking about hills that are in the neighbourhood, as my colleague said, of 1,000 feet in that area.

Mr. Neufeld: They have permission to fly within 400 feet above the ground surface level.

1450

Mr. Wildman: If you are flying at 400 feet or less at 500 miles an hour and something goes wrong and you are suddenly faced with a hill that is 1,000 feet high, you do not have much--

Mr. Chairman: Mrs. Marland, being a pilot, may have some comment on that, but I think I will go to Mr. Partington.

Mr. Partington: I would like to reiterate what I indicated yesterday. We are continuing a conversation that I think is outside the purpose of the four or five weeks we set aside, that being to review the Countdown Acid Rain program, determine how well it is doing and what recommendations we can make. It seems to me that is a very important task. As I indicated last week, there were three other very important environment matters that were mentioned, toxic waste going into the Niagara River, toxic rain and the water quality of the Great Lakes, all of which can certainly absorb untold and unlimited time for this committee.

Low-flying flights over any part of Ontario--clearly, when you read the Countdown Acid Rain program of the government of Ontario, air flights are not even mentioned. The four main polluters are Ontario Hydro, Inco, Algoma and Falconbridge. I can appreciate the concerns Mr. Wildman and Mr. Morin-Strom might have about the environment, but it would appear that the effect may be more related to wildlife and fauna than to acid rain.

Mr. Morin-Strom: The terms of reference of this committee are not strictly acid rain.

Mr. Partington: We passed a resolution as to what we would deal with in these four weeks. I think it is important that we stick to that purpose to some extent, because acid rain as it affects Ontario is a very important matter.

Perhaps we should ask the Ministry of the Environment to table any information or studies it has on the environment of northern Ontario, particularly with respect to low-flying flights. We should probably pass a resolution to that effect and then move ahead to deal with the subject matter we are here to discuss, that is, the review of Countdown Acid Rain. We do not have any information. I have not seen any evidence--maybe because it has not been prepared or maybe it does not exist; maybe that is why we do not have it--as to the serious effect these low-flying flights have on acid rain.

We talk about Falconbridge, Inco, Hydro and Algoma. We do not talk about flights. It seems to me that to some extent we have to put these various matters in perspective. We have a lot to do. We should be using our time on those matters that we know contribute to acid rain.

I would like to move that we ask the Ministry of the Environment to table before this committee all and any studies it has about the effects of low-flying flights on the environment and leave it at that. When we receive that information, we can decide then what we will do about it. In doing that, we may find out just what the ministry's position is with respect to this matter. I do not see the need to spend hours discussing information we do not have when there is no evidence it has any great effect on Countdown Acid Rain. I would like to move that resolution.

Mr. Chairman: Would you read that out slowly?

Mr. Wildman: On a point of order, Mr. Chairman: Is it in order to speak to a resolution before moving it?

Mr. Chairman: Many times in committees and in the Legislature, people have talked before they have made a motion, during and after. I presume it is a nicety you are talking about.

Mr. Wildman: In that case, I will move an amendment.

Mrs. Marland: How many motions do you have now? I heard Mr. Morin-Strom move a motion at the end of his speech.

Mr. Chairman: I did not accept a motion. I do not think one actually came forward.

Mr. Morin-Strom: I put forward a recommendation to the committee. I did not call it a motion, but it had the essence of a motion.

Mr. Wildman: You did not think it would be in order to move a resolution?

Mr. Morin-Strom: That is right. I was leaving it for my colleagues.

Mr. Chairman: Reiterating some information we were provided with at the beginning of the session today, I understand the Ministry of the Environment has not been requested or consulted by Environment Canada or DND with respect to there being any environmental assessment impact necessary for this or any other low-level training route. I think they have clearly indicated that to us. Was your suggestion by motion indicating that they dialogue with the federal government to ensure that they participate in any environmental impact?

Mr. Partington: Yes, I can extend it to that. I said any studies they might have. To some extent, whether they have any studies or not might indicate their concern for the issue. I will add that to the motion if you think it is appropriate, Mr. Chairman.

Mr. Chairman: It would certainly be appropriate to make sure we receive as much information as possible. The sources where that could be obtained should be expanded as far as possible.

Mr. Wildman: I would like to move an amendment, but before I do so I would like the motion read out so I know exactly what I am amending.

Mr. Chairman: You interrupted the process on a point of order, Mr. Wildman.

Mr. Wildman: I am sorry.

Mr. Chairman: Mr. Partington moves that the Ministry of the Environment be requested to table before the committee all environmental studies it has with respect to low-level flights.

Mr. Wildman: I have an amendment then, if it is in order.

Mr. Morin-Strom: On a point of order, Mr. Chairman: I believe Mr. Partington's motion is already contained as a part of my motion from two days ago. I do not see that as adding anything new to what we have already agreed.

Mr. Chairman: Your original motion requested copies of information that the committee might have with respect to the planned flights of the Strategic Air Command over northern Ontario. I wonder if Mr. Partington's motion is suggesting something a little bit more specific than that.

Mr. Wildman: We may be getting hung up on a procedural situation.

What the committee wishes to do is to deal with the issue and then be able to get on to the very important issues before us such as acid rain. That is why it might be helpful if I could move an amendment and then we could vote on it and vote on the motion.

Mr. Chairman: Are you going to speak to your amendment before you make it?

Mr. Wildman: No, I am not.

Mr. Chairman: Mr. Wildman moves that the committee also recommend that the Ministry of the Environment immediately commission a comprehensive environmental impact study in consultation with the federal government on the proposed low-level bomber flights in northern Ontario and that the provincial government request the federal government to impose a moratorium on such flights until such studies are complete.

Mr. G. I. Miller: We are speaking about northern Ontario. Should we not broaden it to include all of Ontario? You are going to cover one area. I think you would want to cover the province as a whole if you are going to deal with something.

Mr. Wildman: Sure; that will be fine. I consider that a friendly amendment.

Mrs. Marland: I think it is wrong to describe the flights as low-level bomber flights. I think you should just use "low-level flights."

Mr. Wildman: I will remove the word "bomber."

Mrs. Marland: I certainly cannot support us directing whether those flights should take place in the meantime. Apart from these test flights, there may be other reasons to have low-level flights.

Mr. Chairman: Could you speak more directly into the mike?

Mrs. Marland: I wanted Bud to listen. He was talking.

Mr. Wildman: I was not ignoring you. I was being asked a question by committee staff.

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Mrs. Marland: To ask for the environmental assessment of low-level flights over Ontario is fair and reasonable. I would like to see the federal government fund it, not the provincial government, because it is federal government jurisdiction in terms of the Department of National Defence.

When the report is available as a result of those studies, I would like it to be referred to future sessions of the committee on the environment in Ontario. However, I feel it is very important at this time that the committee adhere to the matter we all decided upon unanimously, which would be acid rain.

I repeat that my support of the resolution was if we felt there might be, from the information, an impact on acid rain and I have not heard anything to date that relates it to acid rain. Since we have not gotten anywhere with Mr. Morin-Strom's first resolution, because the information simply is not available, I think that is the reason I would support the resolution that is on the floor now and I would like to see us deal with it.

Mr. McLean: I think in one case here we have a very direct resolution. Second, we have an amendment that is made wanting to deal in consultation with the federal government. I think we should deal directly with the provincial Ministry of the Environment, asking it to table what information it has. I think that is the direct route to go and not be involved in the consultation process with the federal government.

Mr. Chairman: Is there any further discussion on the motions and the amendments?

Mr. Wildman: On a point of order, Mr. Chairman: I do not know whether it would be helpful to the committee, but perhaps considering some of the comments that have been made it might be helpful, if the committee wishes, to split the motion and vote on the first part of my motion separate from the second part of my motion rather than the whole amendment together. I do not know whether the committee would wish to do that.

Mr. Chairman: You have the right to withdraw part of your amendment.

Mr. Wildman: No, I am not withdrawing anything. I am just suggesting that there have been comments made that certain members have problems with the second part of the amendment, but that they agree with the first part. I was just suggesting, as an attempt to be helpful, that we could split the vote, but if it is your wish as chairman not to do that, then that is fine.

Mr. Chairman: I would think that your amendment is an amendment not a motion, and if you wish to withdraw part of that amendment that is fine by me, however the amendment should stand.

Mr. Harris: I would like to speak briefly. What the committee is after and is entitled to is some report back from the Ministry of the Environment as to whether there is any environmental impact or whether there is not. I think it is irresponsible of the Ministry of the Environment to sit back and not respond to this committee and just say nothing is available, and I think it is reasonable for the committee to request that information.

I understand the jurisdictional problem of whether this is the appropriate committee or not, and I suggest you can probably debate that for the rest of the break and you will never get on to the business that I think most members of this committee felt we were here to do, which was to deal with acid rain primarily.

Let me say that I think this is an issue that has come up. There are concerns that have been expressed about whether there is any environmental impact of, specifically, the proposed B-52 bomber low-level flights over northern Ontario, and I think it is reasonable for the committee to request that information of the Ministry of the Environment.

I would suggest Mr. Wildman's motion goes a little bit further than most members of the committee would suggest. I would further suggest that the essence of Mr. Partington's motion, although there may be a million ways to word it, is that he wants the Ministry of the Environment to report back to this committee with whatever information it has and if it does not have any, a reason why it does not have any. I think it is the one responsible for the environment in Ontario and if the ministry does not think there is any environmental impact, this committee is entitled to a letter from the Ministry of the Environment saying there is no negative impact and why it thinks so, or there is and here it is and here are the precautions it is taking.

I think it is fair for the committee to request that information. Then, when it gets that information, the committee can take a look at it and decide if, when and how it wants to deal with it. In the meantime, we can get on with the business at hand.

Mr. Chairman: Certainly, this committee does want to get on with the other business, which we have already scheduled. I should point out, however, and I think since the information has been made available to us, that it is the place of the chair to make sure we are all singing from the same hymn-book. That is, that the information which we have been provided clearly indicates that we are talking about an aeronautical matter, which is the jurisdiction of the federal government, and that the reason the Ministry of the Environment does not have the information is the process, as far as these kinds of flights are concerned, that when it is new or if there is some suggestion that there is some other reason for it to be part of, Environment Canada makes the decision that it should be subject to an environmental assessment and then gets in touch with the Ministry of the Environment, which will at that point, in conjunction with Environment Canada, provide an environmental assessment impact study. Clearly, we all know the reason there is nothing forthcoming at this time is that the request or indication from Environment Canada was never forthcoming.

Mr. Wildman: In response to your comments, you are quite correct. That is one of the main reasons for moving the amendment, in that I recognize the federal government's involvement in this. I think the problem with the original motion is that if we request information from the provincial Ministry of the Environment and it simply comes back to us and says it does not have any information, that tells us something but it does not give us the information we are really after. That is why I included in the amendment the suggestion that the provincial ministry, in conjunction with the federal government, should carry out an environmental impact study, because it seems quite apparent, from the information that Mr. Neufeld has given us and what else we have been able to find out ourselves, that no such studies have been done, whereas they have been done on proposed new flight paths in western Canada and the expansion of the existing flight patterns in Labrador.

That is why, in my amendment, I have suggested that such studies be carried out, because if we just ask for the information and find out none has been done and leave it at that, we have not really received what I think a committee interested in the environment of this province should be after.

Mr. Morin-Strom: I think it is important that we get the amendments passed. There are really three subjects here. Mr. Partington is suggesting that we get the Ministry of the Environment to report back to us with any information it has, and it has indicated that it does not have any information. Clearly, that is inadequate. It is clear there has been no study done; so it is not going to be able to report back on the results of any study.

What we have to do is insist that such a study go on before any such flights occur in northern Ontario, and the only way is have teeth to this recommendation. I do not want to see us just sitting back here and coming back a week from now and getting another report that nothing has happened and meanwhile, the flights have started.

The flights are proposed to start March 8, according to the information we heard previously. The point is that to get action we have to have some teeth in here in insisting on the environmental study and to get it is to request that there be a moratorium on these flights until such a study is

completed, and I contend that is completely in order. That is exactly what is happening in western Canada right now. The flights are not going on there pending the completion of the study for both proposed routes in western Canada.

1510

Currently, in the state of Michigan, there are flight routes on hold in the same situation as we are in--previous flight routes--because the Department of Natural Resources in the state of Michigan has raised objections to flights going over state forests. There are low-level flights currently on hold in the state of Michigan pending resolution of their complaints. I think for Ontario not to put teeth behind its request for the same treatment for our residents and provincial parks in northern Ontario would be totally remiss and derelict in ensuring that its environmental interests are being upheld and that it is being treated in the same fashion by the federal government as Labrador, Newfoundland and the western provinces and as the United States Air Force has in the past treated states in the US.

Mr. Partington: I would like to state with respect that perhaps the resolution I suggested should have a clarification or an add-on indicating that if there are no studies, certainly in the tabling of any studies or information as to effects that low-level flights have on the environment, an informed representative of the Ministry of the Environment should come forward and discuss the ministry's position, and in the event there is not a position, he or she should come forward and explain why not and what the ministry's position is.

I think that is as far as we should be going. Mr. Morin-Strom is talking about deadlines and so on. I do not think we are going to get involved with stopping flights that are already scheduled to occur. If we go beyond my initial resolution, as I have suggested we expand it, we would really be getting outside the ambit of our jurisdiction and going beyond what we presently have the ability to do in a reasonable way.

I suggest we find out what studies the ministry has on low-level flights--or flights, period. Second, if they do not have any environmental studies with respect to the flights of the B-52s and F-111s over northern Ontario, I suggest they come forward and explain why they do not and just what the ministry's position is and that we leave it at that. Perhaps they are satisfied with the position. At this stage, I do not think we can go further than that. We should come to a resolution one way or another and get on with the business of the committee.

Mr. Chairman: It was your resolution, and you were the last speaker, so perhaps we can do so. We will deal with the amendment first, but I will read out the resolution as I think we have captured it.

Mr. Partington moves that the committee request the Minister of the Environment to file before this committee all environmental assessment studies it has received pertaining to low-level test flights.

It is amended by adding immediately after the word "flights" "and that the Minister of the Environment immediately commission a comprehensive environmental impact study in conjunction with the federal government on proposed low-level test flight paths over Ontario and that the provincial government request that the federal government institute a moratorium on all such flights until such studies are completed."

I know I have that correct, because Mr. Wildman helped write it out.

Mrs. Marland: Would Mr. Wildman agree to saying that the commissioning of that environmental assessment should be at the cost of the federal government, since the jurisdiction is the federal government's in terms of the Department of National Defence?

Mr. Wildman: I would have no problem with that, but I do not really think it needs to be included in the motion. Frankly, I do not have any objection to the suggestion that the federal government should carry the cost of the environmental assessment.

Mrs. Marland: It is for DND purposes, and obviously DND and Environment Canada have more money than we do in Ontario. Ultimately, it is for the defence of Canada, not just Ontario. That is the logical pot.

Mr. Wildman: I do not have any problem with that; I just do not think we need it in the motion.

Mr. McLean: We really do not appear to have an amendment, but another motion. Would it be in order to move another amendment to the amendment?

Mr. Chairman: Would Mr. Wildman take it as a friendly amendment?

Mr. Wildman: Yes.

Mr. Chairman: Mr. McLean moves that the Ministry of the Environment investigate the environmental impact of any low-level flights in Ontario and, specifically, the proposed military flights by E-52 bombers over northern Ontario and report back to this committee as soon as possible.

Mrs. Marland: You have to include F-111s.

Mr. Chairman: It sounded to me as if it was not necessarily an amendment but perhaps a new motion, not necessarily a contrary one.

Mr. Wildman: I do not think it is contrary; I think it agrees with the amendment.

Mr. McLean: In your amendment, you talk about consultation with the federal government. That gives them an out, in my estimation.

Mr. Wildman: Okay.

Mrs. Marland: Do not list the outs.

Mr. McLean: The last part of your amendment is what bothered me.

Mr. Chairman: Recognizing it is in their jurisdiction, not ours, I suspect they would be able to come up with an out anyway.

I will put the amendment to the committee.

Mr. Wildman: Can the amendment be read, so we will know exactly what it says?

Mr. Morin-Strom: Where does it go in? What does it replace?

Mr. Chairman: Let me read the whole thing again, and I will tell you by way of body language or something exactly where one stops and the other begins.

Mr. Partington moves that the committee request the Minister of the Environment to file before this committee all environmental assessment studies it has received pertaining to low-level test flights.

It is amended further to read, "and the Minister of the Environment immediately commission a comprehensive environmental impact study in conjunction with the federal government on proposed low-level test flight paths over Ontario and that the provincial government request that the federal government institute a moratorium on all such flights until such studies are completed."

Mr. Wildman: Was there a further amendment?

Mr. Chairman: There was no further amendment.

Mr. McLean: You did not accept mine as an amendment then?

Mr. Chairman: Oh, all right.

All in favour of the amendment? Opposed?

Motion negatived.

Mr. Chairman: I will put the main motion. All in favour? Opposed?

Motion agreed to.

Mr. Chairman: Thank you very much. Inasmuch as this afternoon's agenda was specifically on this matter, we will be adjourning shortly after Mr. Harris and others have something to say.

Mr. Harris: In view of the fact the motion suggested by Mr. McLean, I agree, would be similar to one already carried and therefore out of order, could we at least have the understanding from you as chairman that when the motion goes forward to the Ministry of the Environment you will indicate that this committee is expecting the ministry to report back with its findings on any potential impact that it has?

It is not good enough to say, "We do not have any information." We are expecting the Ministry of the Environment to come back and say: "We do not think it is a problem, and it is not worth while doing an environmental assessment, blah, blah, blah," or, "Yes, we think it is a problem. What should be done? We are going to do it," or, "Here is the action we are taking."

The motion was a little vague in that an interpretation by you as chairman to the Ministry of the Environment would be in order.

Mr. Chairman: I will make known to the minister the wishes of the committee as expressed by those here when the resolution is presented to the ministry.

Before we go, however, we do have one further resolution which was tabled. Remember, I had taken it as notice of motion. I am not sure whether Mr. Morin-Strom would like to withdraw his resolution at this time. It was never actually voted on.

Mr. Morin-Strom: My understanding was that the intent of the motion was passed by consensus at the last meeting, as the chairman stated at that point.

Mr. Chairman: I was not here at that point.

Mrs. Marland: We did pass it.

Mr. Morin-Strom: It was not by voice vote, but the intent was passed by consensus.

Mr. Chairman: Fine. Before the committee adjourns, tomorrow we are going to Sudbury. I am not sure whether everybody has received his tickets, etc., from the clerk's office. Make sure you have them and be at the airport in time for us to leave at 8:50 tomorrow morning.

The committee adjourned at 3:19 p.m.

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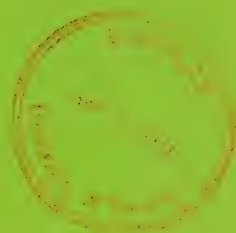
V-10

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, MARCH 5, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitutions:

McLean, A. K. (Simcoe East PC) for Mr. Eves

Ramsay, D. (Timiskaming L) for Mr. Poirier

Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witness:

From the Township of Muskoka Lakes:

Hatch, S., Mayor

LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, March 5, 1987

The committee met at 10:09 a.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: Now that we are all back from Sudbury in one piece, just be careful and watch out for the overhead cranes today.

This morning, we have the mayor of the township of Muskoka Lakes, Sheilah Hatch, with us. Will you come forward and take a chair? I am not sure whether you have a prepared statement or would like to make some introductory remarks. It is your choice. The committee members will have some questions for you at some point.

DISTRICT MUNICIPALITY OF MUSKOKA

Mayor Hatch: My presentation is semi-prepared. I will be speaking from notes. I hoped in the last week or so to be well enough organized. I only got the word last week that today was the day week and I really have not had an opportunity to get anything properly together. I apologize for that because I know from my own committee experiences that it is much easier if you have something in front of you to follow along.

I welcome this opportunity. As the chairman and perhaps the staff will know, the district municipality of Muskoka, where I am a councillor and chairman of the acid rain committee, has been requesting an opportunity to speak to the select committee since the Countdown Acid Rain program was announced. I am very pleased to have the opportunity this morning.

Muskoka is ground zero for the curse of acid deposition in Ontario. We have been aware of and acutely concerned about the environmental damage that has been inflicted upon us from beyond our boundaries for more than a decade. We have been encouraged by recent actions in the province which will by 1994 reduce Ontario's contribution of pollutants to that chemical soup our atmosphere has become.

In general, and I emphasize in general, we are satisfied that the industrial giants, such as Inco, Falconbridge and Algoma, have developed an environmental consciousness and that with the added incentive of government abatement regulations they will succeed in reducing their emissions to more acceptable levels.

Ontario Hydro seems to be in a different sort of jam from the one the mining and smelting companies are in. As it is owned and governed by the people of Ontario, its environmental consciousness ought to reflect the attitudes of Ontario citizens. Ontario Hydro is the powerful, and I emphasize powerful, source of power for Ontario, a high-profile public utility. Muskoka is satisfied that Hydro is trying to produce enough power for us cleanly and at the least possible cost.

Let me expand a little. With respect to the question of enough power, exclusive dependence on hydraulically generated energy is no longer reasonable, given the vast distances it has to be transmitted. The quantity of nuclear-generated power is constrained by public nervousness about the process, a nervousness I do not necessarily share. I believe I understand the Candu system and I believe the waste problem can be overcome. I personally believe more dependence on nuclear-generated power is the sensible approach. That does not make me too popular in some quarters.

Therefore, to produce enough power to satisfy the voracious power appetite in Ontario, coal-fired plants appear to be an ongoing and necessary element in meeting the demand. I see water and nuclear as clean, but coal-fired is definitely, in my view, the dirtiest alternative.

We always hear about the cost. I tend to discount that as somewhat irrelevant, once again not making myself too popular in some quarters. The arguments about cost usually come down to cents per kilowatt-hour on a bill. I believe it to be quite true that we enjoy very cheap power in Ontario. If we do not believe that, we should ask somebody from Boston.

We are extremely fortunate that, in spite of the massive debt, the enormous capital costs of the nuclear plants and amazingly favourable labour rates and benefit programs enjoyed by Hydro's employees, we still have quite low hydro bills as individuals. In addition, poll after poll has assured the elected official in this province that the citizens are prepared to pay the price for a clean environment.

We come to the point of my presentation today. It has to do with the regulation of or governing of Hydro's emissions from the thermal plants. It appears reasonable to us, but we have one outstanding concern, which is my main reason for being here. It is the use of the banked credits. Our concern is twofold.

First, we believe it likely that use of these credits at certain times of the year will further acidify our snow pack and intensify the damage inflicted during the spring melt, which is already the most critical time of the year for us.

Second, and perhaps of more political importance, the banking provisions are not in keeping with Canada's stated position on abatement, as they allow emissions beyond the regulated level without public review of their necessity. Even if this were never to cause us a real or practical problem, the perception perpetrated by this provision will cause us incredible and unnecessary devilmint.

Perhaps I should explain. We in Canada cannot afford to give the American anti-control lobby and press another opportunity to question our sincerity, to divert attention from the very good and strict measures we have imposed already. Some Americans marvel at our ability to do those things. This banking provision is just the hook they need to start another round of that sort of nonsense. Perceptions are almost indelible. Just this week I heard again about our vehicle emission standards. It is a tired old thing. Once again, I heard they were three times as high as the American limits. That is simply not true any more. The new lower standards are done.

I also heard again about the conspiracy theory, that incredible tale about how Canadians have a machiavellian scheme to export power to the United States if we can just convince them about the environmental damage being caused by their dirty power plants. That is another myth.

I heard Business Week questioning the Minister of the Environment (Mr. Bradley) on the validity of the agreement of the eastern Canadian provinces to reduce emissions by 50 per cent by 1994. The reporter's question was, since no one has signed that agreement, is it not sending an insincere message to the Americans? The minister attempted to explain that the signatures were only ceremonial gestures and that the legislated abatement programs, such as exist in Ontario, were the important elements of the agreement.

As an observer of the exchange, I am not at all certain that the reporter accepted the minister's arguments. The reporter's perception was that the signatures were of critical importance in delivering a sincere message. That is why I say the perceptions are almost impossible to erase and we cannot afford to perpetrate perceptions that we are insincere in our abatement efforts. Unfortunately, the banking provision that does not require public review for withdrawal is leaving that message.

If this committee can assure me that any request by Ontario Hydro for use of the bank credit, emissions beyond the regulated levels, will be subject to public review and that the regulation will be amended to make a clear statement on this issue, I will be satisfied that this outstanding concern with the countdown program is resolved.

Having, I hope, given you the main part of my message, I will take this opportunity to explain to you why I have become as deeply involved in this issue as I have. I take every opportunity of this sort, especially when I have to drive for a couple of hours to have the opportunity.

My involvement began almost a decade ago, and my objective then as now is simple. I want to have clean, normal rain to nourish our forests and lakes rather than pickle them. I want drinking water that is not tainted with aluminum, lead, copper and asbestos at sometimes toxic levels. I want air to breathe which is not full of the devil's brew of foreign particles.

Unfortunately, in spite of our efforts, the quality of the rain and the snow, of the drinking water and the air has not improved one iota in 10 years in Muskoka. In fact, improved monitoring techniques seem to indicate that the situation has actually deteriorated and the forecast is that it will continue to worsen.

I live and work in the most attractive recreational landscape not only in this province but probably in all of North America. I also sit on the tourist board, so I can safely say that. The freshwater lakes, the pine trees, the rocky shores and the haunting voice of the loon are classic symbols of the tranquil get-away environment so cherished by our society.

Our economy in Muskoka, my livelihood and that of my neighbours and friends depend upon the healthy maintenance of our 2,000 lakes and ponds and the enveloping forests. We are now watching Muskoka die a slow and agonizing death, but not without a fight.

The prognosis of this problem was clear to former district chairman Hugh Mackenzie when in 1980, seven years ago, he asked me to chair the new standing

committee of district council, which was to be called the acid rain committee--that name has stuck--because he was already familiar, I guess, with my commitment to the issue. I have chaired this committee every since. Although the membership has changed a little with each municipal election, we continue doggedly to pursue our simple goal of effective emission abatement.

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Some numbers might help to put Muskoka's plight into perspective. The current sulphur deposition rate is 32 kilograms per hectare per year. This is as technical as I get. The Ontario program will reduce that to 28 kilograms by 1994 if the forecasts are correct. However, scientists tell us that Muskoka's unbuffered terrestrial and aquatic ecosystems may withstand loadings of 18 kilograms per hectare per year, but the sensitivity of it is such that 11 kilograms would be a safe deposition rate.

By 1994, I will have been working on this for 14 years. I may no longer be in municipal politics. There is not a lot of job security in that, but if I am, will I still chair a committee that is dedicated to resolving this problem as it worsens? Today I cannot imagine how we will ever reduce the deposition rate to a safe level. We have to get another 10 to 15 kilograms per hectare per year of this cut out of our atmosphere after the 1994 Canadian objectives are attained.

The challenge is, how are we ever going to achieve it? The answer appears to be that we simply must have our American neighbours on side.

What has my committee done so far? We have travelled to the New England states and to Washington. We have exchanged visits with New York citizens involved with the Adirondack state park. We have done the Sudbury tour that you fellows did yesterday, I understand. We have been up there a couple of times. We have had extensive discussions with people from Ontario Hydro, with Mr. Campbell, Mr. Taborek and many others, even down to our local office. We have toured the Bruce nuclear power development and informed ourselves as well as possible about the nuclear generation. We maintain a close liaison with the Dorset research centre. We are frequent visitors and we frequently take visitors out there.

All of this has generally been in order to be better informed ourselves and to be in a better position to understand the efforts that are being made towards abatement and to be able to offer constructive and proper criticism. We lose no opportunity to comment and present briefs on a wide variety of related issues, such as the auto emission standards or the transmission line out of the Bruce. We undertake a huge variety of speaking engagements. We assist the media at virtually every request in order to make Muskoka's point of view and the plight of this problem known beyond our boundaries, in fact, as far away as Japan on one occasion.

We have worked in Muskoka with the board of education, so the very young people will understand their legacy, and we have published a variety of materials to give the citizens of Muskoka accurate information which we hope will activate them. In this we have been assisted by the Ministry of the Environment. It has helped us with the publishing. The ministry had many thousands of copies printed so that generally they were in distribution throughout the shield.

We have been at this effort even longer than the Canadian Coalition on Acid Rain. We certainly applaud their efforts and they are of great assistance to us, but periodically we have to remind the world that we have been at it even longer.

I wonder if it is all in vain. Instead of extending the list of organisms that are affected by acid deposition, my challenge to all those, like the infamous Senator Byrd, if you will pardon me, whose comments yesterday were enough to send me into a fury, is to compile a list of those things--and I would say organisms except that it goes beyond living things--that are not affected by this phenomenon. I also want them to prove that they are not affected, because that is precisely what we are being challenged to do all the time. Is this maple tree really affected? Prove that it is affected. I say it is plain now that the list would be very short of things that are not affected by acidification.

The cumulative impact of this phenomenon is now upon us. We can see it today in our lakes and forest, on our buildings and monuments. We cannot see the lost organisms, the crustaceans, amphibians, fish and birds which no longer exist. We cannot tap the dead maple trees, although I hear lots of talk about how it is syrup time. I know for a fact, because I know many operators, that it is a declining industry.

I am led to believe that we as human beings will begin to act decisively when our health is affected. That time is also upon us. I think that is my problem in Toronto this morning. As I come down into the grease, I start choking. We are aware of the respiratory problems. Others who have more technical abilities can certainly fill you in on any of those health-related, more technical aspects of them. We are aware of the heavy metal poisoning. We are aware of the aluminum connection in Alzheimer's disease. We know grazing livestock are suffering nutrient deficiencies because the pasture grasses no longer provide the necessary nourishment. We know hunters are warned against eating the liver of moose and deer in our area. The livers are laced with cadmium. We know fishermen are repeatedly warned about overindulging in their catches, laced with mercury.

There is absolutely no doubt that the health of humans is affected now. Once again, people for ever ask for proof. It may be better to ask for proof that there is no effect.

In conclusion, I urge you all to take this problem very seriously or your grandchildren may not live the long and healthy lives you wish for them. The cure is relatively simple. Stop emitting. Poll after poll confirms that the cost of cleanup is not the critical issue to an informed citizen, as the cost of not cleaning up is so enormous that it cannot be calculated. Therefore, if I could simply stop being a receptor, I guess I would not get so mad about this.

I certainly welcome any questions from any members. It is sometimes difficult for me now, as I have been at it for so long, to know what aspects of this may be of particular interest to you. Thank you, Mr. Chairman.

Mr. Chairman: Thank you very much; Mayor Hatch. I am sure your presentation will mean that there will be questions forthcoming.

I notice you mentioned Senator Byrd. I share some of your comments about him. I suppose if in a more literal way he really was a bird, particularly a

black duck and therefore an endangered species, he might change his tune somewhat.

Mayor Hatch: We can only hope.

Mr. South: I want to thank you for your presentation. It was very good and very understandable. I am sure you have a lot of impact wherever you go.

Where do you get the information with regard to the level you quoted? You said for your area the level should be down to 12 kilograms.

Mayor Hatch: They say 11 kilograms to be absolutely sure; 18 kilograms may be good enough. Those figures come from Dr. Tom Brydges, I believe, while he was with the Ontario ministry. He is now with the federal government. That was the origin of those figures, through the Ontario programs, especially at Dorset where they are doing constant monitoring.

Mr. Partington: From what you stated, although the Ontario emissions will be reduced by 60 per cent by 1994, it only reduces the fallout in your area by about one eighth.

Mayor Hatch: It is four points.

Mr. Partington: From 32 kilograms to 28 kilograms.

Mayor Hatch: That is right.

Mr. Partington: What is the status of the lakes? We hear about lakes that are dead and lakes that are sensitive. Can you describe the present steps that you are taking in the district of Muskoka?

Mayor Hatch: Each lake or each body of water in Muskoka--and as I say, there may be 2,000 lakes and ponds--has its own individual fingerprint. Through the district planning and development department, we have done extensive water quality monitoring and testing of all these lakes for development. As part of that monitoring for chlorophyll A levels, we have also done pH readings. We know now the headwater lakes that do not flush, which are generally sitting in a basin of rock, are very much more sensitive than Lake Muskoka, for instance, which is at the very bottom of the watershed. It turns over about every nine months and takes everything out of the whole watershed, which is about 1,600 square miles.

Each particular lake has its own personality. We have lakes in Muskoka that are acidified. Generally speaking, at this point, they are undeveloped headwater lakes in the more remote areas. What we are trying desperately to establish--and I do not think they have been able to--is the rate of loss of the buffering capacity of any particular body of water. We would certainly like to get a handle on that because it seems possible then that the liming program, which is really a Band-Aid technique, might help. If you have a lake that is just teetering and you can lace it with lime before the spring shock, you might be able to save the organisms, if you do not have to do it every year for the next 50 years, and thoroughly change the quality of that water. That is an effort that is still being made. They know there are some lakes that simply cannot be saved and that a general liming program is unlikely to be a solution.

Mr. Partington: I guess the question I am asking is what percentage of the lakes in your area are either acidic or very vulnerable to being so?

Mayor Hatch: Every last one of them. Are you familiar with the rating system that has been put out by the Ministry of the Environment in Ontario?

Mr. Partington: No, I am not.

Mayor Hatch: Unfortunately, I do not have that with me. Maybe I do. Maybe it is in one of these papers. There is the list for a variety of the counties. They are rated from one to five, one being an acidified lake, five being an unaffected lake. There are only a couple of small ones in Muskoka that rated a four. Almost invariably, they are threes or twos, which means they are either moderately sensitive to acidification or extremely sensitive.

Mr. McLean: What is Lake Muskoka?

Mayor Hatch: Three. Lake Joseph and Lake of Bays, however, are two.

Mr. Partington: Do I take it from your evidence that even if Countdown Acid Rain is 100 per cent effective, the condition in Muskoka will continue to deteriorate, because of your statement that you have to get down to 11 kilograms?

Mayor Hatch: Or even 18 kilograms. I do not even know how we would get that far.

Mr. Partington: What you are saying is that it is still substantially away from doing anything to correct the problem.

Mayor Hatch: It is a long way away. We need the American assistance, without a doubt. I do not have the impact that the Ontario government or the federal government will have in trying to do that. We cannot save ourselves in Muskoka. Ontario alone cannot save Muskoka nor can the federal government by itself. We have to get the Americans on side.

Mr. Partington: Countdown Acid Rain is a good program.

Mayor Hatch: It is a good program.

Mr. Partington: But we have to have the Americans moving the same way?

Mayor Hatch: That is right.

Mr. Chairman: Picking up on the deposition within the Muskoka area, I will ask the researcher to comment on a request we have made of the Ministry of the Environment.

Mr. Neufeld: The Ministry of the Environment has been requested to present some of the results of the modelling work it has already done, which will visually show the committee exactly what kind of reductions we will get from the countdown program and then look at what we can expect if the Americans reduce their emissions by 50 per cent. We hope that will help to illustrate some of these questions in a visual fashion.

Mayor Hatch: I wish I had had more time to have some things like that along with me, but I really did not.

Mr. Wiseman: Mine is a follow-up to Mr. Partington's question. I take it from that if we reduce our emissions in Canada, most of your fallout will be coming from the United States. That is why you keep saying unless they clean up their act, you are no better off in Muskoka. We saw some of the maps here the other day. They hope to reduce those emissions and get down to something around 20 kilograms or a little less in most areas. That leads me to believe yours must be coming from south of the border.

Mayor Hatch: When we look at the Environment Canada weekly reports, which I receive--and I suppose they are generally available--they show the results from each of the weather stations that monitor. We use the Dorset one, but there is one for Nova Scotia and there are some in Quebec. That tells us the pH of the precipitation, how much there was and where the storm track came from. Invariably, our dirty weather seems to originate in the Ohio River valley or in that area. It comes up on the south wind. Those are our worst events.

To follow along on that, because we get those reports every week, we can see that the pH of our precipitation invariably is down around four, 4.1, 4.2 and it is very rare that we get an event higher than 4.6. We have had a few that were below four. Environment Canada says anything below 4.6 is damaging. Consistently, ours are down between four and 4.2, so it is just a constant battering. Yet, the stuff that is hitting Muskoka appears to track up through the Ohio River valley. I suppose we pick up a certain amount of stuff in the heavy metal department, the particulates or something, coming up over the Golden Horseshoe, too. Talk about the rocks, socks and knocks theory, maybe the rocks come from this part.

Mr. McLean: I wonder if I can follow up on the maple trees you mentioned in your remarks. In your area, how fast have they deteriorated in the last five years? When did the maple syrup industry first notice the rapid deterioration problem?

Mayor Hatch: The people I know personally who have been making some syrup every year, some of them for three generations, noticed problems five or six years ago, and, of course, were thinking, was it the frost? Was it the fact that the cattle had been roaming through the bush? It really took a bunch of them sitting down together--and most of them are farmers of course, so they meet at the soil and crop meetings and stuff like that--I guess they got talking about it and decided maybe they should look into it in a little more detail. I think by that time they were starting to hear the comments out of Quebec.

I can speak of one particular maple syrup producer who lives very near me. He is on my council. His name is Don Goltz. He is also a farmer. He is on the milk marketing board. He is a very successful farmer and manager, and he is devastated about his sugar bush. What he first started to think was very peculiar was when he would go out in the spring and there were so many little dead branches on the ground. He said that never used to happen. That sugar bush has been tapped by that family for three generations and his trees are dying quickly. It is very easy to observe. The crowns are just gone. The researchers have been into his bush and they have told him not to let his cattle run through there. His cattle do not run that bush any more. They have taken the core samples and told him about what is due for medicine. You line the bush and maybe you save some of the trees, but basically he has a lot of good hardwood to burn.

I would say that the awareness for the sugar producers has probably been within the last five years, and in the last three years it has been dramatic. Even someone like myself who is not a technocrat can see the problems in the hardwoods, not just the maples but the beech and the ash as well.

Mr. McLean: It is going to affect the whole forest industry in time.

Mayor Hatch: True. Tourism is our number one economic generator in Muskoka. Forestry is number two. We have some big plants up in Huntsville: Domtar and Kimberly-Clark. Their wood mainly comes from the park, but they are certainly pulling a lot of wood out of the north end of Muskoka as well. Across Canada, I think there is no doubt--Mr. Darling's committee has had extensive discussions with the forestry people--we cannot afford to lose that resource and there is a lot of it at risk; a tremendous amount of it at risk. As I see it, the hardwoods are going first. Although we have generally heard about the spruce and balsam, to me, the obvious forest decline is in the hardwoods.

Mr. Chairman: We had Ministry of Natural Resources officials here last week and, just following along on your comments about the damage to the foliage, they indicated--and I suspect it was with perhaps some scientific hesitation and not necessarily denial--that they were not sure of the cause and effect directly being related to SO₂ emissions. As a person from there, being directly there, your comments to that would be?

Mayor Hatch: I have seen it. I am not, unfortunately, hampered by having to bear scientific proof to these things, but I have been aware for some time of the foliar damage and really the first time that came to my attention was probably about six, maybe eight, years ago and it was with the petunias I had planted along the path coming up to my house. I could really monitor the pH of the rain on any particular occasion by the fact that we would get anything around four and I started checking with Dorset to see what they said the pH was on that particular occasion. I found that my petunia blossoms were just ruined if there was one that was 4.1 or less. I would lose all the blossoms in any given storm.

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Then I started to notice that you could also see an effect on the deciduous leaves. It was almost as though you had a bonfire burning and the sparks came down on the leaves. They looked like they had been burned into little bits. They would ultimately die, because I guess the wax layer is destroyed. Then they are subject to everything else.

We had another strange phenomenon happen on my road in June about four years ago. There was a beech tree that came out in leaf in May and at the end of June, within about a week, all the green leaves just curled up and fell off the beech tree. If you are familiar with beech, you know they will often hold their leaves all winter, even once they are dead. That tree was dead almost instantly. I talked to the foresters about that and they said it is a plant's way of committing suicide. It cannot stand it any longer. We had quite a stand of beech along about a half a mile of the road to our house, and they are dying quicker than you can count them. They cannot haul them out for firewood fast enough.

Mr. McLean: I have a beech too. I better take a look at it.

Mayor Hatch: Yes, you should.

Mr. G. I. Miller: To follow up on that, you are the mayor of Muskoka.

Mayor Hatch: Of Muskoka Lakes township, yes, and I am a member of the Muskoka district council.

Mr. G. I. Miller: Has the municipality made any request to have a special investigation by the Ministry of the Environment and the Ministry of Natural Resources to take a very close look at what is happening? This committee has been established to review acid rain and the damage it is doing to Ontario. Acid rain does not have any boundaries. There is no control.

We want to give some tools to the various ministries. If we can get some co-operation south of the border, I think that is important, but it is not going to be easy. The statement just made today indicated we do not have justification to prove the damage we are assuming it is doing. That is important. We have discussed the maple industry and the maple sugar industry. Quebec seems to have a dollar value on the damages and it is using that. I do not know if Ontario does or not. So far, it does not appear that we have a handle on it. I wonder if maybe your municipality can use its influence to make sure that we do have accurate information and tools to work with.

Mayor Hatch: By "the tools," I am assuming you mean an economic value placed on the district municipality of Muskoka, the tourism industry, the agricultural industry, the forest industry and all those sorts of things. We have not particularly nor specially undertaken to value totally the district of Muskoka. My comments really were that the cost of not cleaning up is incalculable, because I do not know how in the name of mischief you can. Several people have tried. About six or seven years ago, there was a consulting firm in Toronto hired by the Ministry of the Environment in Ontario to do just that. They wound up putting a price on only the sport fishery, or something, because it was too huge.

L'Amour & Associates completed a study for the federal government last year and the researcher's name was Denis Gertler. He was trying to establish the cost of the social distress caused by acid rain. That was another effort to get a handle on the health-related costs, the distress levels and that sort of thing.

The building contractors in Muskoka certainly know. The painters and the plumbers are getting a heck of a lot more business. Is that an economic cost or is that a benefit to the plumbers and painters? Okay? It is six of one and half a dozen of another. I think, however, we can all very safely take the approach: prove to us that acid rain is not causing this problem. It is easy enough to document the things that are going wrong, such as the frequency of having to paint and the frequency of having to replace the plumbing. The home for the aged in Bracebridge is one where the copper plumbing has had to be replaced more often than it should. That is a cost in the district of Muskoka to the health care system. Does that count as a health-related cost? Where do you put it? Which column do you put it in? It all gets mixed up.

The district of Muskoka has not done so specifically. The Dorset Research Centre is in Muskoka and certainly the researchers and scientists working there are on top of things, especially things happening in Muskoka already. We have a good liaison with them and if we have something we really need to know, we can encourage that.

To spend the time and money that is involved in trying to prove a cost, we only open it up for a whole lot more argument. We can give you a rough

dollar value of our tourism and our manufacturing and forestry industries, and I could get those figures to you if you needed them, but whether that really covers it, I do not know. I really do not know, and I do not know whether I answered your question either. That is the politician in me.

Mr. G. I. Miller: In the other area, the lakes, according to the guidelines of the Ministry of Natural Resources, you have to be careful about eating the fish. Is that in effect in all lakes?

Mayor Hatch: Yes, where you can catch the fish, you are warned. I do not know whether you are interested in the ice-fishing business. I am not really an ice-fisherman. It is sort of an excuse to go out in a snowmobile; so I could not really say I have firsthand knowledge of this. I never expect to catch anything anyway, because I am such a hopeless jigger.

They are having considerable difficulty in moving their huts from here to there and the old fishing holes are not producing what they were for lake trout in the main lakes, especially in Lake Joseph and Lake Rosseau. I am not sure, but I do not think they fish that much for lake trout in Lake Muskoka, but there is some.

It is harder to make the catches and the signs are up on the government wharfs to watch what you eat, which is not really a happy thing for our tourist industry. You have to put up signs in the marinas and so on. I wish we did not have to do that.

Mr. Chairman: Since we are touching on these effects and we have touched on the forests and the lakes, the committee had requested some information with respect to waterfowl. Handed to you today were exhibits 26 and 27, Paul Hansen's report on acid rain and waterfowl. I suggest you look at that carefully for other effects you suggested are a result of the emissions.

Any other questions of the deputant? If not, Sheilah, thank you for taking the time to drive from Muskoka to share your concerns and some of your suggestions with the committee. We appreciate your being here.

Mayor Hatch: I was glad to come. Thank you for putting up with me for this long. I get mad about this; I really get mad. I do not want to leave the impression that we are being critical of the Ontario government or the federal government, because that is not the case. I just hope I can leave the impression that somehow we have to find the hook for the Americans and we have to hit them in the pocketbook because that is all that really matters to them, the money. I understand what Mr. Miller is saying. Those economic studies have been done, but I do not think we are ever going to convince the likes of Mr. Byrd unless we can get him here and put him under a dead tree someplace and ask him to fish in an empty hole.

Mr. Chairman: Sheilah, you are a model of restraint when you say, "Hit them in the pocketbook," and when you mentioned Senator Byrd, I thought you were going to say, "Hit him over the head."

Members of the committee, we do not have any other deputants this morning. Therefore, you have an hour or so to yourselves before lunch, and we will adjourn and meet again at 2 p.m. We have the Canadian Coalition on Acid Rain appearing this afternoon.

The committee recessed at 10:50 a.m.

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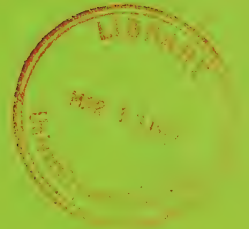
FILE

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, MARCH 5, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)

Charlton, B. A. (Hamilton Mountain NDP)

Eves, E. L. (Parry Sound PC)

Fish, S. A. (St. George PC)

Grier, R. A. (Lakeshore NDP)

Henderson, D. J. (Humber L)

Marland, M. (Mississauga South PC)

Partington, P. (Brock PC)

Poirier, J. (Prescott-Russell L)

South, L. (Frontenac-Addington L)

Substitutions:

McLean, A. K. (Simcoe East PC) for Mr. Eves

Ramsay, D. (Timiskaming L) for Mr. Poirier

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Canadian Coalition on Acid Rain:

Perley, M., Executive Co-ordinator

Hurley, A., Executive Co-ordinator

Michener, R., President and Chief Executive Officer, Tourism Ontario Inc.

Foucault, A., Representative, Canadian Paperworkers Union

McKercher, R., Executive Director, Northern Ontario Tourist Outfitters
Association

Anthon, J., President, Federation of Ontario Cottagers' Associations Inc.

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, March 5, 1987

The committee resumed at 2:05 p.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: Good afternoon, members of the committee and guests. This afternoon, we have the Canadian Coalition on Acid Rain with us, in the persons of Adele Hurley and Michael Perley, to make a presentation. I apologize, Michael and Adele, I get the names mixed up.

Ms. Hurley: It has happened before.

Mr. Chairman: Would you mind introducing the other people you have with you?

As I indicated to you, as far as this afternoon is concerned, we have a couple of hours. I understand you are going to be back with us on April 15. I mention that for the committee's benefit, so you will be cautioned to make sure we are able to terminate at a respectable time this afternoon. I have indicated to the deputants, those others who are with you, if you would perhaps change places with Michael or Adele, or in any event make sure that if you are responding to questions, you speak into the microphone that is there so Hansard can pick you up.

CANADIAN COALITION ON ACID RAIN

Mr. Perley: Thank you, Mr. Chairman and committee members. We are very pleased to be here.

I would like to identify the members of our board of governors who are with us today and then ask Adele to begin reading our presentation.

On my left, I would like to introduce Bob McKercher, who is executive director of the Northern Ontario Tourist Outfitters Association, one of the coalition's founding groups. Immediately next to me is Roly Michener, executive director of Tourism Ontario, which has been a key participant in the coalition's work over the years and represents the industry that is going to be the biggest industry in Ontario in the 1990s. On my far right is Andre Foucault of the Canadian Paperworkers Union. The paperworkers are 60,000 strong across Canada and are very concerned about the impact of acid rain and associated air pollutants on forestry and therefore on Canadian jobs.

Adele, would you like to begin the presentation?

Ms. Hurley: Mr. Chairman and members of the committee, we are very pleased to be here today and to have some of our governors with us. We are all aware that an overwhelming majority of the people of this province are concerned about acid rain's impacts on the environment and human health. How we deal with this issue will determine the quality of the environment we pass on to our children and our grandchildren.

The Canadian Coalition on Acid Rain was formed in 1981 to deal with the rising concern about this acid rain issue in Canada and in the United States. Since then, the Canadian Coalition on Acid Rain has grown to include 52 member groups with a total membership approaching two million Canadians.

We also have with us Jean Anthon of the Federation of Ontario Cottagers' Associations Inc.

These 52 member organizations in the coalition now have a membership whose total is approaching, as I was saying, about two million Canadians. These include conservation, business, labour, religious, health, agriculture and tourism organizations. In fact, for the committee's use, appendix A of this brief today contains a list of the member organizations of this coalition.

The Canadian Coalition on Acid Rain commends this government on its decision to pass nonappealable regulations on the smelters in this province. Those regulations were years overdue and were a necessary precondition to this country's credibility on the acid rain issue. There are, however, amendments to the Ontario Hydro regulations that the coalition feels are crucial at this time. This is one of the main reasons we are here to talk to all of you today.

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Our presentation will make the following points:

Countdown Acid Rain has essential objectives which we support. The emission targets put forward for Ontario are a good start. They provide an important leading example for our neighbours. We commend the government for this initiative.

The Canadian Coalition on Acid Rain has the following concerns about the program and its implementation, however:

The targets must not be weakened. The limits established in the program provide an excellent start on a serious effort to deal with the acid rain problem. The resolve to meet these or more stringent targets must not be allowed to weaken. While the present government's resolve has been clearly demonstrated, future governments may be less inclined to maintain Countdown Acid Rain in its present form.

Targets must be enforced. The limits must be enforced in the future if this program is to work.

Banking is unacceptable. Ontario Hydro's banking provision is not consistent with the objectives of Countdown Acid Rain.

We have proposals for strengthening the program and these are as follows:

Public hearings should be held before a legislative committee in advance of any change to any of the five Countdown Acid Rain regulations.

The Countdown Acid Rain program's implementation and enforcement efforts should be subjected to regular, open public scrutiny. The final reports on the implementation plans for the four corporations should be the subject of hearings before the Environmental Assessment Board. Regular monitoring of the four corporations' emissions should be undertaken by an independent body and made public in a quarterly report. Hearings before the Environmental Assessment Board should be held to review nonenforcement of the Countdown Acid Rain emission limits.

Ontario Hydro's regulation should be amended to remove any reference to banking.

We thought we would like to take a quick look into the background of these hearings. Before we take up in detail these points which I just went through, we would like to review briefly the process that led to these hearings here today.

In 1985, the Ontario Ministry of the Environment published Countdown Acid Rain, Ontario's acid gas control program for 1986 to 1994. This document described the program and its anticipated impacts. On the last page of that Countdown Acid Rain brochure, under the heading "Public Consultation," was the following statement:

"Nevertheless, a further opportunity will be provided to individuals or groups to express their views on the abatement program and its financing by appearing before the select committee on the environment. Hearings of this new committee of the Legislature will be scheduled during the early part of 1986."

Beginning in February 1986, Michael and myself and many of our governors on the coalition pressed the government to fulfil this commitment. A series of unsatisfactory exchanges with elected officials followed and it was only after considerable effort by this coalition and its constituent groups that these current hearings were scheduled, one year after they were promised.

In getting down to this program as outlined in Countdown Acid Rain, we agree with the program's stated objectives of reducing emissions from the 1980 base-year level of 2,200 kilotonnes to 885 kilotonnes by 1994. These objectives provide an essential start in the serious effort to clean up acid rain in this province.

There is clear and mounting evidence that acid rain has serious negative impacts on the aquatic environment, the terrestrial environment and human health.

In August of last year, the federal-provincial research and monitoring co-ordinating committee released a detailed study entitled Assessment of the State of Knowledge on the Long-Range Transport of Air Pollutants and Acid Deposition. The study concluded the following about the impacts of acid rain on the aquatic environment:

"Estimates from limited surface water surveys indicate that approximately 14,000 Canadian lakes are currently acidified. The model predicts that if present levels of wet deposition in the heavily impacted--which is greater than 20 kilograms per hectare per year of wet sulphate--region east of the Manitoba-Ontario border are maintained, a further 10,000 to 40,000 additional lakes will be acidified."

That same report came to this conclusion about acid rain's terrestrial effects:

"The evidence to date suggests that air pollution, including acidic precipitation, is most likely involved on a long-term basis in the decline of forests in several parts of the world."

As for human health effects, the study reported the impact of acid rain on drinking water: "Acid deposition can pose a human health hazard through increases in the levels of toxic components in drinking water by leaching

metals from waterbeds and sediments and by corroding materials used in water distribution and storage systems."

Last month in Washington, testimony before the environmental pollution subcommittee of the Senate environmental and public works committee highlighted concern about acid rain's health impacts. For example, Dr. Philip Landrigan, director of the Division of Environmental and Occupational Medicine at the Mount Sinai School of Medicine in New York gave evidence. He had reviewed recent US and Canadian work and concluded the following:

"All of these data confirm that exposure to current, relatively low levels of air pollution can produce toxic effects in the lung. These effects are not benign...They are in fact pathologic effects." This was in his testimony of February 3, 1987.

"Several lines of converging evidence--epidemiological studies of populations, controlled studies of human volunteers and toxicologic studies in cell systems and animals--all indicate that current levels of acid air pollution are able to produce substantial adverse health effects in certain segments of the American population and particularly in children."

Accordingly, the emission targets specified in Countdown Acid Rain are essential for two reasons: They will have an important positive impact on the environment and human health in Ontario and its neighbours because they will significantly reduce acidic deposition, and they will provide a critical signal to the United States that Ontario is serious about dealing with acid rain and is more than willing to shoulder its share of the burden.

Ontario's adoption of this emissions reduction target is a very important step and we support it. However, we would like to strike two cautionary notes.

The target may have to be made more stringent. Ministry of the Environment officials have indicated that the annual target was calculated to support an annual deposition rate of 20 kilograms per hectare per year--I believe that is 18 pounds per acre per year--assuming a similar reduction in US emissions. Dr. Balsillie stated in his testimony before this committee a few days ago that this amount, this 20 kilograms per hectare per year, may be too high to protect sensitive environmental areas. He referred to Minnesota's decision to bring in and 11 kilograms per hectare per year standard.

Another problem with this target is that it may have to restrict fluctuations in emissions. The current target is specified as a total annual amount. However, we know that high peaks within any year can have serious negative consequences. Spring pulses have major aquatic effects and hourly peaks in emissions significantly worsen health impacts. Therefore, the target may have to be modified to impose seasonal, monthly, daily and/or hourly limits.

Something else we want to mention here today is that it would seem that tough action on acid rain is very popular. Opinion polls clearly show that there is great public support for the kind of objectives and emission reduction targets contained in the Countdown Acid Rain program. A 1985 Gallup poll conducted for the coalition showed that 87 per cent of Ontario residents thought Canadian action should be taken even if the United States did not proceed with its own acid gas program. Our other finding in that poll was that over two thirds of Ontario residents were willing to spend \$5 per month or more in taxes or increased product prices to give financial support to the needed cleanup.

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Clearly, Countdown Acid Rain is headed in the right direction, with the broad backing of the Ontario public.

I will ask my colleague Michael Perley if he would like to continue.

Mr. Perley: As has been said and we want to make this very clear, the coalition does support the emissions targets of Countdown Acid Rain. We also support the use of regulations under the Environmental Protection Act to achieve these targets. It is within this context of support, therefore, that we put two questions.

First, will Countdown Acid Rain actually achieve the desired emissions reductions?

Second, does Countdown Acid Rain communicate the appropriate signals to our neighbours, particularly our American neighbours?

The first question concerns us deeply. We want to ensure that the professed targets are the ones that are actually achieved. Our concern has some historical foundation. In Ontario, we have witnessed a number of commitments made and then commitments broken. Unachieved targets for Inco's emissions, beginning with the first control order issued in 1970, and for pulp and paper industry effluents, come to mind immediately.

We believe that the use of regulations--rather than control orders, which are appealable--will help significantly in actually getting results. However, we have three specific concerns related to the achievement of emission reductions, which are set out in our presentation. Section 5 which follows puts forward specific proposals to address these concerns.

The first concern mentioned at the beginning of our proposal is that target levels must not be weakened. We want to ensure that the commitment to the emission reductions specified in Countdown Acid Rain remains strong. Backsliding by future governments on this commitment by making the target less stringent will do serious damage both to the Ontario environment and to Canada's credibility on the acid rain issue.

Our second concern is that target levels must be enforced. In order for Countdown Acid Rain to achieve its targets, each of the four corporations must implement an appropriate plan to reduce emissions. The plans will not be finalized until the end of 1988, so we are unable to scrutinize them at this point, as are you. In addition to ensuring that the plans are adequate to the task at hand, the government must closely monitor the four corporations to ascertain whether the emissions objectives are being achieved. Where they are not, the government must act to bring the offending corporation or corporations into line. It is essential that all of these steps are actually taken, and we emphasize this again, given certain incidents in the past which many of you I am sure are very familiar with.

The third concern is that the banking provision under the Ontario Hydro regulation is unacceptable. The Canadian Coalition on Acid Rain is very uncomfortable with the banking provision in the Ontario Hydro regulation. We believe that the banking provision has the potential to weaken Countdown Acid Rain's long-term efforts to improve Ontario's environment and also to send the appropriate signal to our friends to the south.

Let us look at this Ontario Hydro regulation in a little more detail.

Section 7 of the Ontario Hydro regulation establishes the so-called emissions bank. It permits Hydro to build a bank of emissions credits beginning in 1986. The credits cannot be carried forward for more than five years. In fact, Ontario Hydro has already indicated to you that, as far as it is concerned, under this regulation, it now has 100,000 tonnes of emissions credits in the bank from 1986. There are three important points to note about this scheme.

The first one is that no environmental or human health impact criteria or conditions are placed on any withdrawal from the bank.

The second important point is that any decision about withdrawals from the bank will be made at the discretion of the Ontario cabinet, with no requirement for public scrutiny or input.

The third problem is that specific details concerning the bank remain to be worked out until Hydro submits its final plan on or before December 31, 1988.

In summary, no justification for this provision has been put forward and/or documented. Hydro indicated in its testimony before the committee on February 26 that it may accumulate credits of about 500,000 tonnes in the bank by the early 1990s. Hydro also stated that coal is its so-called swing fuel. Hydro relies on coal generation to make up for loss in other generation capacity and/or increases in demand. Thus, major increases in emissions are possible.

Figure 1 in your material and on the overhead presents a case whereby Hydro accumulates 500,000 tonnes of sulphur dioxide emissions in its bank and then draws them down in 1990 and 1991. As the figure shows, the increase in emissions is dramatic. The annual allowable limits are exceeded significantly in both years by this use of the bank. Is this kind of performance consistent with the environmental and health objectives of Countdown Acid Rain?

There is another feature to the regulation that should be noted. Section 8 of the regulation reads:

"Ontario Hydro shall file written reports with the Minister of the Environment at any time that Ontario Hydro is of the opinion that it will be necessary to exceed the limits specified by sections 4, 5 or 6, as modified by section 7, because of generator breakdowns or other major disruptions in electrical supply or transmission, setting out the causes, amounts and timing of the anticipated excess in sufficient detail so that the Minister of the Environment can advise the Lieutenant Governor in Council whether and to what extent Ontario Hydro should, by amending this regulation, be permitted to draw on its bank established during the previous five years and any estimated amount Ontario Hydro will be able to bank in the succeeding five years."

In other words--and I apologize for the length and the lack of punctuation in that section; it is a masterpiece of drafting--Ontario Hydro is not restricted to drawing on credits established in the past. A kind of forward averaging will also be permitted.

Ontario Hydro will be able to make a loan from the bank based on anticipated future performance over a succeeding five-year period as well as on past credits already accumulated. The question immediately arises: if Hydro

makes a withdrawal based on future performance, what is there to ensure that the future performance will actually materialize? We believe this provision makes the emission limits unenforceable and threatens the credibility of the program.

Now I have a few words about the potential impacts of banking. The banking provision jeopardizes Countdown Acid Rain's objectives. There are two main points.

Banking permits variations in Ontario Hydro's emissions which are potentially damaging to the Ontario and neighbouring environments. There are no environmental or human health criteria in the regulation limiting the extent to which Hydro's output can exceed the countdown target.

Banking for Ontario Hydro encourages the permission of major swings in US utility emissions in any future US acid gas program. Representatives of the Ministry of the Environment have emphasized the importance of Countdown Acid Rain as a leading example for the US. By including banking in the Ontario Hydro regulation, they are stating to the US that wide variations in utility emissions are acceptable. We are doing it; why should they not do it? The impact of this should not be underestimated; utilities in the US northeast and Midwest account for over 75 per cent of total US SO₂ emissions.

Another point I should note, which is not in the text, is that at least two of the four proposals now before the US Senate to reduce acid-rain-causing emissions do so with relation to what is going on in Canada. The Americans are paying some attention to what kind of action Canada is taking while formulating their own program.

To move to some conclusions concerning banking, banking in our view amounts to a legal means of breaking the law. Banking for Ontario Hydro should not be permitted without a detailed specification of the type, timing and maximum quantity of withdrawals to be permitted. Detailed independent analysis of the impact of such a scheme must show that it will not be injurious to the human health or environment of Ontario or neighbouring jurisdictions referencing both, first, the direct impact of Hydro's own emissions under such a scheme and, second, the impact on the Ontario environment of US utilities adopting a similar approach, using the Hydro banking scheme as a precedent.

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Under no conditions should a provision for forward averaging be allowed.

We have a number of proposals we would like to make to strengthen the Countdown Acid Rain program. I will proceed to those now. The Canadian Coalition on Acid Rain has proposals which directly address our three concerns and which we believe will strengthen the Countdown Acid Rain program.

First, legislative committee hearings before any amendment to the regulations. Any proposal to amend or supersede one or more of the five Countdown Acid Rain regulations must be brought before a committee of the Ontario Legislature for public hearings prior to approval. This provision should be written into each of the regulations.

Second, there should be full public scrutiny of the regulations' implementation and enforcement. To begin with, public hearings should be held on final plans. Prior to the ministry's approval of plans submitted by all of the corporations on or before December 31, 1988, public hearings should be

held before the Environmental Assessment Board. The results of these hearings should be conveyed in a report to a committee of the Legislature.

All of the corporations should be monitored on their emissions performance. An independent body should do the monitoring and should report the results of its findings publicly on a quarterly basis.

Finally, public hearings on nonenforcement: Hearings before the Environmental Assessment Board should be held to review nonenforcement of the Countdown Acid Rain program's emission limits. The results of these hearings should be communicated in a report to a committee of the Legislature. A public advisory body should have the responsibility of reviewing compliance with Countdown Acid Rain. It would report publicly to the minister, making recommendations relating to such matters as the need for public hearings before the Environmental Assessment Board concerning unprosecuted violations of Countdown Acid Rain. The existing Environmental Assessment Advisory Committee could perform this role.

Those are a series of oversight responsibilities which we feel should be within the purview of the Legislature and which will help to guarantee implementation and enforcement. Our recommendation vis-à-vis Ontario Hydro is quite simply that no banking should be overtly allowed in the Ontario Hydro regulation. The regulation, O. Reg. 662/85, should contain no reference to banking for Ontario Hydro. Sections 7 and 8 of the regulation should therefore be amended so that they read as follows:

"7. Ontario Hydro shall perform such studies and research as are necessary to determine the options available by which Ontario Hydro can meet the limit prescribed in section 6 and report thereon in writing to the Minister of Energy and the Minister of the Environment by the 31st day of December, 1988."

Section 8, as amended by our proposal, would read:

"8. Ontario Hydro shall file written reports with the Minister of the Environment at any time that Ontario Hydro is of the opinion it will be necessary to exceed the limits specified by sections 4, 5 or 6 because of generator breakdowns or other major disruptions in electrical supply or transmission, setting out the causes, amounts and timing of the anticipated excess in sufficient detail so that the Minister of the Environment can advise the Lieutenant Governor in Council," and it carries on as the unamended regulation does.

Appendix C shows the modifications to the text of the existing regulation needed to give this result. That is set out in that appendix for your reference.

In summary and by way of conclusion, we would like to reiterate that the Canadian Coalition on Acid Rain believes that Countdown Acid Rain provides an excellent start to the job of cleaning up our acid rain problem. However, we have three concerns which relate to the importance of meeting the program's objectives. Countdown's targets should not be weakened, Countdown Acid Rain's targets should be effectively enforced, and the banking provision for Ontario Hydro is unacceptable.

The proposals for strengthening Countdown Acid Rain address these concerns. Legislative committee hearings should be required before any Countdown Acid Rain regulation is amended. Public scrutiny of Countdown Acid

Rain's implementation and enforcement should be permitted and encouraged. Finally, the banking provision for Ontario Hydro should be eliminated.

Thank you very much for the opportunity to make this submission to you today. I would like to ask Andre Foucault from the Canadian Paperworkers Union, followed by Roly Michener of Tourism Ontario, to make a few comments they have requested to make.

Mr. Chairman: Just before Mr. Foucault proceeds, I should mention to the committee that on page 5 of the submission there was mention of the environmental pollution subcommittee in the US. I should mention that the researcher has provided us with a copy of the evidence that was supplied to that committee with respect to the health effects. It was just handed out to you today.

Mr. Perley: Can I just add also that Jean Anthon of the Federation of Ontario Cottagers Associations Inc. would like to make a comment after Mr. Michener?

Mr. Foucault: We certainly share the concern of members of the coalition in the human cost and the environmental cost, with respect to acid rain. We bring forth an additional concern and that is employment.

The forest industry in this country annually ships \$20-billion worth of products, making it the biggest contributor in the nation towards our balance of payments, shipping more than metals, food and agriculture, fisheries and automotive combined.

The resource about which we speak is the forest. Studies have been conducted indicating that tree growth can be seriously affected by airborne pollutants. Those studies were initially conducted in the Adirondacks and the Appalachians in the US, and confirmed in Canada as recently as last month as having the potential impact of slowing tree growth by a factor of as much as 61 per cent in the white spruce species.

This certainly concerns our organization, the people who work in the industry and the membership of our union. The forest industry is not one that can, like others, retool or make a model adjustment or add a new design to a certain product and recover when things get bad. It takes 50 or 60 years for a tree to mature to the point where it can be harvestable for purposes of newsprint, fine grades of paper production or lumber production.

For that reason, we cannot afford to be neglectful of the forest. The mistakes we make today will impact on a generation or two from now and could well be irreversible. We are dealing here with a renewable resource that has been given to us by nature. We have a decision to make at this time whether we want it to be renewable or not.

It is important to us that the government of Ontario has taken the steps it has to this point. We are showing clearly to the US, with whom we are talking, that we are serious about what we say. However, we feel the banking concept of Ontario Hydro undermines the very credibility of what we seek to accomplish. If we hold our adjustments as examples to the Americans of what we think should be taken on by them, we are in big trouble. If the Americans adopt the banking process as well as being one the Canadians flag as the way to go, we will perhaps be further back than we were when we first started this campaign.

I leave with you our very deep concern with respect to this banking system, especially in the light of employment in the forest products sector.

Mr. Michener: I sit here today as the representative of a province-wide federation of tourism and hospitality associations. The membership of our federation in terms of individual businesses is between 6,300 and 6,500 enterprises. It is arguable whether our industry is the second-largest or third-largest industry in Ontario, with 1986 revenues of \$8.8 billion, foreign exchange earnings of \$2.5 billion and direct revenues to the province, in terms of sales taxes alone, in excess of \$1 billion.

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Our industry also happens to be the largest employer in the province. In 1986, it is estimated that our industry provided 214,000 person-years of employment on a direct basis, with indirect and induced employment amounting to a further 165,000 person-years of employment. We provide employment to skilled and unskilled people and to more youth, women and visible minorities than any other employer group in the province.

Our industry is very much a resource-based industry both in terms of natural and man-made heritages in the province. A very good portion of our industry is reliant on the preservation and conservation of our natural resource and wildlife in this province.

With me today is Bob McKercher, representing the Northern Ontario Tourist Outfitters Association. It is an organization whose 1,600-odd members represent fishing-hunting camps and lodges throughout central and northern regions of the province which rely totally and exclusively on the availability of a healthy natural resource, including angling and hunting opportunities, and the renewability of that resource.

I think it should be said for the record that studies have demonstrated that some 10,000 lakes in this province have already been impacted by acid precipitation in the form of acid rain, and another 40,000 lakes are very sensitized to this process.

I echo the comments made by the previous speaker that we cannot afford to permit a banking system by Ontario Hydro that would suggest to our neighbours to the south that we are not serious about this problem, which by the way is a bilateral problem, as most of you realize. We are exporting acid precipitation and importing it at the same time from our American friends.

I might also emphasize the fact that this year, 1987, is the first year that Ontario has implemented an acid rain tag on our nonresident fishing permits, some 500,000 of which will be distributed to our American guests and visitors in the coming year. In that process, we hope to educate our friends and neighbours to take the message back to their legislators that indeed legislation is necessary and timely in the United States. With the Hydro banking scheme, it is questionable as to how serious we are about this very serious problem.

Mrs. Anthon: As president of the Federation of Ontario Cottagers' Associations Inc., I would like to thank the committee members and the coalition for allowing us an opportunity to address you on the present situation on acid rain as perceived by the cottagers of Ontario, and some of our concerns and recommendations.

In case you are not too clear, the federation is the umbrella group for all the cottage lake associations throughout the province. There are approximately 500,000 recreation properties in Ontario. More than 300 lake associations are active members of FOCA and we also have more than 300 individual memberships representing interest groups, safety, government, industry, boating and tourism.

We act as a liaison between cottagers and other groups, primarily government. We act as an information centre. FOCA is considered Ontario's largest provincial ratepayers' organization. We have been operating for 19 years as a volunteer, nonprofit, nongovernment organization. We circulate the Ontario Cottager four times a year. We are presently involved in the production of a special edition of this magazine, featuring environment concerns but focusing on acid rain. I will make sure the committee gets copies.

We got involved in this ambitious project because acid rain is still a number one concern for the cottagers of this province. I know there are a few of you cottagers sitting around this table who understand what I am trying to say. Cottagers were one of the first to be aware of the problem of the deteriorating water quality of their lakes. What has happened to the fishing? What is this strange algae floating around now?

Throughout the years, FOCA has been involved in all the major acid rain conferences in Ontario and the United States. We have felt great satisfaction in the Countdown Acid Rain program implemented by Ontario, but concerns are still present. The reduction targets have been announced as being on target, but is this primarily because of industrial cutbacks or slowdowns? When business recovers, will the government yield to special considerations, considering jobs or costs? What does the environment understand about the banking system? I hardly understand it. Hydro is currently building credits for emissions. When those figures get to my side of the ledger, they are no longer numbers. They transform into extreme pollution conditions. I do not think the trees understand the banking system and I do not think my lungs do either.

As members of the Canadian Coalition on Acid Rain, we fully support the recommendations as outlined today. The reality in cottage country is that, in spite of the countdown program, prime cottage areas will continue to deteriorate at alarming speeds unless the United States develops its own reduction programs. We know that more than 50 per cent of the acid precipitation in cottage country is US-sourced and it is with dismay that cottagers watch the slow processes to controls. We also would like to recommend that Ontario and this committee play a prominent role in uniting Canada in acid abatement programs and coax those few provinces to come on line. We must present a united commitment.

We recommend also that Ontario find new measures to awaken Americans to awareness of the damage being done to their good neighbours to the north. We would recommend that Ontario become respectable environmentally by cleaning up our waterways. Our own hands are not clean.

We recommend that Ontario impress the federal government of the necessity of placing acid rain first on the agenda when meeting with the US President in the next few weeks. Governments seem to have lots of time and tolerance, but I do not think the environment does.

We also recommend that this committee encourage even higher standards of auto emissions. My understanding is that, with the new regulations coming on, we will still be behind the United States..

I just wish there was an easy solution. I just wish we could dismantle the tall stacks and dump the garbage back in the respective backyards. Would that not be easy? They would be so quick to clean up themselves, but we cannot do it. We have to take the slow, long steps, it seems.

Cottagers do not feel they are an effective part of the legislation system, as you people feel some rewards. They are not part of scientific research teams. They feel so much the victim yet. We recently polled all our member associations on what the issues of today really are and the overwhelming majority listed overtaxation--and we are talking real dollars--overboating safety, overpopulation of lakes, but acid rain is number one. That is why I am here today.

I encourage you in your mandate and thank you again.

Mr. Chairman: The committee has listened with interest to your presentation. As a matter of fact, I should say that this is a first with respect to committee members sitting quietly and listening to a presentation entirely before they wanted to ask questions, but I am certain there will be questions.

Mr. Ramsay: Mr. Perley, I think you had implied that the Ontario system, the standards being set and the banking system, did not actually set a good example to the Americans when they study what further programs they could get involved with. Did I understand that correctly?

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Mr. Perley: Certainly, we feel the portion of the Countdown Acid Rain program that deals with the smelters is on target and a good example. The problem we have with Ontario Hydro's regulation is not with the target that is established to be met by 1994, which is a good target. It is the allowance of a banking provision, of an establishment of credits, and a potential exceeding of those emission limits that we have a problem with and that is what sets a bad example.

That is rather like saying to our American friends, "If you want to regulate your utilities, which produce 18 million short tons of sulphur dioxide a year and you regulate them well under an acid rain program, you can allow those utilities to bank six million tons a year." That would be roughly the equivalent of what Ontario Hydro is allowed to do. That would certainly not be acceptable to Canada if we were on the receiving end of it, and we cannot afford to set that kind of example, because what we do here is very closely scrutinized for its credibility, for its effectiveness and for its enforceability.

This would look to any American observer who is used to dealing with the US Clean Air Act, which is a very stringent, legally enforceable act, as a way of apparently setting a target and then allowing the utility that is regulated to ease out of that target and get out from under it. That is the problem we are concerned with.

Mr. Ramsay: It is catastrophe banking. It is not just banking of credits to be used for any reason without getting permission. There has to be a very good reason for Hydro to withdraw from the bank.

Mr. Perley: The problem with that is that one would expect that and the regulation is generally formulated to indicate that this would not be a trivial circumstance in which banking would be permitted; nevertheless, there are no criteria specified as to what level of proof is required, that use of the emissions banking system would somehow be appropriate and noninjurious to the environment of this jurisdiction or neighbouring jurisdictions, or to the health of the public, for example, asthmatics or people with bronchitis living in the vicinity of the power plants whose emissions would be increased. There is nothing of that level of detail. Given the level of detail and strict enforcement provisions that are contained in US legislation, and that should be contained in ours, I do not think that is appropriate.

We feel there should be very strict criteria established, that Hydro should be required to prove that if it is going to need, under some serious situation, to exceed the emission limits that it should not be allowed specifically to do it in legislation, and that if ever a situation like that arises, Hydro must come, and the burden of proof should be on Hydro, publicly to demonstrate that there will be no injurious environmental or health impacts associated with the use of anything that might be called a banking scheme or an exceeding of emissions, and that is not specified in the current regulations.

Mr. Ramsay: Under the US new source performance system, would you not think when they set a cap per unit of electricity produced, as far as an emission unit or standard per unit of electricity produced is concerned, that still falls short of our 175,000-tonne limit in 1994? We have set an overall target. It could be endless with respect to the emissions in the United States. It is based upon how much electricity is produced. We at least have set an outside limit of 175,000 tonnes. I am sure that is a stronger signal.

Mr. Perley: As we said, we think the targets are very good and we would not want to see the achievement of those targets and the value, as you say, of those good strict targets jeopardized by this apparent way of legally getting around them in the case of the Ontario Hydro regulation.

As far as new source performance standards are concerned, those only apply to US power plants built after 1970. The plants that we desperately need emission reductions from in the midwest are the ones built prior to 1970 that are not grandfathered in under the Clean Air Act.

Mrs. Marland: Mr. Perley, I hear what you are saying about our problem and I know you were here last week when we were talking with Hydro. I know you heard me say to Hydro that it cannot win either way at this point because, on the one hand, some of the public are saying: "Do not use the nuclear-powered plants because we do not know what to do safely with the nuclear waste. On the other hand, do not use your coal-powered plants unless you put all the emission abatement control procedures in place."

We also heard from Hydro last week that even if it were to put those abatement measures in place on all the stacks of all their coal-fired plants, whether or not they used them all the time, the average installation takes four years and it takes three years to get approval through the Environmental Assessment Board; so at best we would be looking at seven years. They also said, when I asked what the real costs would be to us the consumers if they were to do all that, it would be five per cent added to our electricity bills.

In your report, you mention that you have done a study, a Gallup poll. I have also heard that other polls have been done. The public is now a very sophisticated public. If you go back to when the Progressive Conservative government in this province established a Ministry of the Environment, that was a large step forward in recognizing that if we were to have an environment 100 years from now that we would cherish, we had to do something to preserve it.

When we look at the awareness of the public, if an average poll is 1,000 out of nine million--not that they would all be able to speak for themselves--we are still looking at a small percentage of people in terms of the average polling. If you look at their willingness now to pay more for services, products and commodities to preserve the environment, I asked Mr. Campbell and then made the suggestion to him, why does Hydro not as a public, nonprofit body turn over its responsibility now to the public and conduct its own poll recognizing that it is the wholesaler? The retailers, through the local utility commissions, would have to do the polling.

I suggested that they poll the residential buildings, at least to start, and ask the public if it would be willing to pay this added five per cent. I was somewhat surprised to find that Mr. Campbell said they had never thought of doing it and that he would take it to the board and they would discuss it.

Suppose a majority of the public as consumers of this marvellous 20th century technology, the beneficiaries of that technology, said: "Okay. Spend the five per cent. I will pay five per cent to have something to leave to my great-grandchildren. If we started now and it took seven years, would that give you the kind of ammunition so that you, in turn, could complete your problem south of the border? Would that be the greatest single piece of ammunition that you would need?

Mr. Perley: The idea is a good one because, based on the polling we have seen, both ours and that of others, I think the outcome would not be in doubt. It would tell us that by an overwhelming majority in this province the public is ready to pay five per cent and perhaps even more, if necessary.

There are two pieces of ammunition which we would be delighted to have in our armament when to go back to Washington in about 10 days. One would be New Brunswick and Nova Scotia having signed up to agree to do their part of the 50 per cent reduction agreement, which both of them have so far refused to do. The second would be the clarification and cleaning up of this banking business.

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In other words, if we are going to set a target for Ontario Hydro, let us set it. Let us not set a target and then say, "By the way, if circumstances change a little bit, you can exceed the target in years to come." That kind of proposal does not exclude their coming to a committee of the Legislature or the minister or whoever on a case-by-case basis if an urgent situation arises to say: "We have a problem coming up in a few months. We are doing some modelling now to look at the environment and public health impacts possible under emissions exceeding the target by a certain amount." In extremis, such a situation might occur, but full public hearings should take place.

We do not believe there should be any regulatory provisions specifically allowing that to happen, because the Americans, in so far as we are talking

about them, particularly our adversaries, such as Energy and Commerce Committee chairman John Dingell of the House of Representatives and Senate majority leader Robert Byrd and others who are not in support of acid rain controls, are constantly scrutinizing what Canada is doing with a view to using any perceived cracks, weakening or funny business involved in Canadian regulations as a great excuse to confuse members of the House and the Senate who may not be committed to acid rain control one way or another, by saying:

"These Canadians have been demanding action from us for years, but we have a couple of their provinces supposedly in agreement to reduce but which are not doing anything. We have their largest utility legally allowed to break the law. This program is a farce. Therefore, why should we be bothering to listen to the Canadians' concerns?" That is the problem.

In so far as we are talking about a bilateral context, those are the two things, the agreements with Nova Scotia and New Brunswick and their getting on board and the Ontario Hydro banking provision, that we would most like to have.

Mrs. Marland: I did not understand the banking provision in totality until Hydro was before us last week. I have to admit I was rather amazed because if there is that provision, it is just common sense that it defeats the whole purpose. It really is pointless.

There is the other part of the US equation, which I have to keep coming back to because we have been told so much in the last two weeks that everything is divided by 50 per cent between us and the United States. Knowing how hard you have worked for the last number of years in Washington, I think it must be very frustrating not to be able to say, "Yes, my own backyard." Since we are dealing with mentalities such as Senator Byrd, how do you feel the latest information? I understand the human health risk information is reasonably new on the subject of acid rain.-

Mr. Perley: Yes.

Mrs. Marland: Where in the past you have not been able to get through a Robert Byrd from West Virginia mentality, once you can start to focus on the fact it is no longer the frogs, the trees, the plants and the little fish in the lakes but it is now your son, daughter or great-grandchild, do you feel you will be able to educate people? I am not saying us only; obviously, Ontarians still have to be educated and encouraged. I do not see that as nearly as big a task here, because I do not hear anybody in Ontario saying that acid rain is not a crisis in Ontario nor that it does not exist. I do not hear that in Ontario.

When you hear what is being said there, do you think now that other people in elected positions in Washington who have brains would be willing to listen to the human health risk and use that aspect to get at the people who represent industry in West Virginia?

Mr. Perley: That is very important. That evidence, which has now for the first time been collected and presented to the environmental pollution subcommittee, I can guarantee you is now being disseminated or being prepared for dissemination by a number of our American allies, such as the Sierra Club, the Izaak Walton League of America, the National Wildlife Federation and other large and influential conservation groups. Other groups that will definitely be making great use of this information that spring to mind are the League of Women Voters of the United States and the American Lung Association.

You touched on an important point, which is what we have to do to Robert Byrd, not do to him, but how we have to work with Robert Byrd in his own backyard. That involves disseminating that kind of information. In fact, the most acidic acid rain episode ever recorded in the United States, with a pH of 2.1, occurred in Wheeling, West Virginia, which has one of the dirtiest power plants in the US. There is information that does need to be disseminated to Mr. Byrd and other senators in similar positions to Mr. Byrd's constituents.

Also, Mr. Byrd has to be shown that it is possible to have an acid rain control program without throwing all of West Virginia's coal miners out of work. Given that there is both high-sulphur-content coal and low-sulphur-content coal producers in his state, any acid rain control strategy can benefit at least some of his coal miners. There is a lot of educating to do with Robert Byrd, and I agree with you the health information should form an important part of that effort.

Mrs. Grier: I found it surprising if not to say significant that in its presentation before us, Ontario Hydro never mentioned banking. When I asked them about it, they explained it, but in their submission we did not get into any detail on the forward averaging. I think perhaps your submission is the first time the committee has heard about that.

Could you explain to us how you see it working, especially in the light of the fact that when Hydro was before us, it said that after 1990 the use of coal would increase? If they are banking now at 100,000 tonnes a year but are admitting they are going to be able to bank less after 1990, how do you see them anticipating how much they are going to be banking in the future? Are they going to be telling us in 1990 that they will be able to reduce by 100,000 tonnes in 1992? What are the implications of this forward averaging?

Mr. Perley: That is one of the problems of the provision, that it is not clearly specified how this will be used. What it amounts to is a general provision that allows you not only to take credits based on money already put in the bank but also to borrow against future revenue, if you like, to use an economic analogy. It is so general as to allow them to have the provision, not only retroactively but also in the future, in virtually any circumstance and any scenario you care to look at.

I would like to give that some more study myself and when we reappear in April, report back to you in a little more detail with some hypothetical scenarios of what could happen under the forward-averaging provision. It is so general as to make any description academic at this point.

Mrs. Grier: Am I overly suspicious in suggesting that over the five years when it is going to be easy for them to meet the targets, perhaps they are going to be banking 500,000 tonnes of emissions against the day when they admit they are going to be using more coal and therefore for the next five years they will be using up the bank they have established in the first, easy five years?

Ms. Hurley: That is one of the questions you might want to go over with Hydro when it comes back on March 11, to see what the understanding of the utility is as to how it can use forward averaging.

We liken all this to someone driving a car who drives 100 kilometres to work in the morning because he needs the extra speed. He drives 40 kilometres at noon when he comes home for lunch. Then because he has used up 140 kilometres and he has been given only 160 kilometres, he has only 20

kilometres left to get home at night. He figures he has 160 kilometres to draw from the next day; so he borrows 40 kilometres from the next day, puts that with the 20 kilometres he had left over for going home and he has 60 kilometres to get him back home at night.

It is an incredible situation. He can be going at a snail's pace or he can be flying along the Don Valley Parkway at 150 kilometres if he feels he needs it. He can also explain to the officer when he stops him that it is a crisis. The officer, given the situation at hand and given that there is no particular scrutiny on him, is inclined to take his word for it.

Mrs. Grier: I found a real contradiction between the suggestion Mr. Ramsay has made here that the banking would be used only in case of crisis and the assertion that because there was no process laid out by which the banking could be accessed, there would be lots of time for cabinet and ministerial consideration before any approval would be given for the banking. Could you comment on that?

1510

Mr. Perley: We looked at the provision without reference to what anyone else has said about the provision. Based on that review of the provision, we do not see any guaranteed environmental or public health criteria that are going to be applied in case of Hydro's applying for using the banking provision.

We also do not see any guarantee that there will be any public scrutiny of the evidentiary basis that Hydro uses to apply for withdrawals from this bank it has established under the regulations. In our view, that is a closed-door, behind-the-scenes way of legally breaking the law. There are no criteria set forward here by which we can judge whether in a worst-case scenario it might be necessary under some inconceivably unfortunate circumstance to require an emission exceedence.

Mrs. Grier: Have there been any data you are aware of that shows the effects of acid rain in a peak emission period as opposed to over a longer term? Do you have anything to say that if Hydro were allowed for a short period to increase its emissions well above the standards, there would be any worse effect than average emissions over a long period?

Mr. Perley: You are hitting on an extremely important point. Let us use another example here. The US and Mexico concluded a so-called acid rain agreement a month or so ago because of data showing that short-term bursts of sulphur dioxide over the course of a given day from smelters in the southwestern US, and according to modelling data, from new smelters in Mexico could conceivably affect the health of asthmatics in that region. We are talking about exposures of 10 minutes, 20 minutes, half an hour.

No data has been developed here at all. This is what is missing in this whole business. There has been no modelling data, no provisions, no structure, no analytical model to determine, if Hydro had to crank up Lambton, Lakeview, Nanticoke and/or the other plants to high production levels or flat-out production levels, what impact the resulting SO₂ emissions, which would presumably perhaps be drawn from the bank, would have on local residents within one mile, two miles, five miles, 10 miles, 15 miles, 20 miles and 50 miles radius of the plant. It is just not there.

We cannot tell what the impact would be there. That is why there must be this burden of proof shifted to Ontario Hydro to demonstrate by the best

evidence available that they will not impact those people and the environment as well.

Mrs. Grier: When Mr. Campbell was here, he made the statement that the impacts of NO_x were worse than those of SO_x and said there had been some scientific work that he thought supported that view. I suspect the implication was that as Hydro emits more SO_x than NO_x , somehow this is not as bad as it ought to be.

Mr. Perley: Which was not stated, I do not think.

Mrs. Grier: No. To be fair, that is my implication from what was said. But from your knowledge, do you have any evidence about the comparative effects?

Mr. Perley: Absolutely. I was very concerned when I heard that comment because I was afraid it would leave members of the committee with the impression that it is nitrogen oxides that are really the problem here; that, after all, nitrogen oxides are a relatively small percentage of Hydro's total emissions and therefore somehow we should not worry about the sulphur dioxide emissions. That goes contrary to virtually every major reputable scientific study on the overall acid precipitation phenomenon, including sulphuric and nitric acid fallout in the airborne forms that I have ever seen.

I think I know what he might be referring to. It is really a hypothesis, not a set of data, that nitrogen oxide emissions may have a role in forest damage in the following manner. Nitrogen is required for all living things to grow on; in forests particularly, there is a lot of nitrogen taken up in the soil when trees are growing. If you have an overabundance of nitrogen, supplied in part by nitrogen oxide pollution from local sources or from long-range transport, trees get overfed if you like. In the case of one hypothesis, the trees do not harden in time for the frost in the winter; they keep growing longer than they should and when the frost comes down, they are killed off because they have not been able to harden properly. That may account for forest damage.

That is a hypothesis that is being put forward by some scientists. There are several other hypotheses of the same type. It is not fair to say at all that nitrogen oxides are the major problem associated with acid rain damage. None of the aquatic damage, or very little, occurs from SO_2 .

Ms. Hurley: What usually happens is that when we are working on a nitrogen oxide issue, the car companies say it is sulphur dioxide that is it the most serious pollutant.

Mr. Perley: Yes. Depending on what industry you are talking to and what it emits--

Mrs. Grier: And there is no evidence either way?

Mr. Perley: Again, as Adele said, we can remember GM and Ford insisting on the importance of sulphur dioxide. Now we have a major SO_2 emitter insisting on the importance of nitrogen oxide--Noranda Mines, which is a big sulphur dioxide emitter, insisted on the importance of nitrogen oxide--so it is convenient.

Mrs. Grier: You mentioned forest damage, and I want to ask about the comments from the Ministry of Natural Resources. I do not know whether you

were here that day or whether you had a chance to look at their submission to us, but they were, to be charitable, cautious in drawing any conclusions about maple dieback and certainly hedged their statements to the effect that they could not be sure it was acid rain and that there were other things like cattle pawing the roots and a variety of other things.

Mr. Perley: Cattle pawing the roots? I never heard that before.

Mrs. Grier: What do you think? What is your position on the whole question of maple dieback and acid rain? Do you have anything that indicates there is a direct link?

Mr. Perley: We have some research from Quebec, which is the hardest-hit area, where maple stands are showing the most damage in eastern Canada; there is no question about that. There are some researchers who have associated the ability of acid rain to leach nutrients out of the soil with the dieback that is occurring there.

The way they put it is not that acid rain kills maple trees; they say that acid rain is perhaps the straw that breaks the camel's back. You may have the trees weakened by ozone and other air pollutants, you may have drought and you may have pest infestations. Acid rain comes along, leaches the nutrients out of the soil just enough to knock the trees over the edge into decline. That is something that is supported by soil analyses in some regions of Quebec where the dieback is occurring, where we see much lower levels of nutrients and higher levels of acid in the soil.

There are some other researchers in the northeastern states who also have reached a similar conclusion; so it seems there is some relationship between the two. What exactly it is we cannot pinpoint, but it seems to be that if we removed sulphuric and nitric acid fallout, our forests would have an extra bit of insurance. That is perhaps one way of putting it.

Mrs. Grier: You talk a lot about public scrutiny of the 1988 submissions from the four major polluters, and I would be interested in having you address the whole question of timing because we now have Hydro suggesting it is going to have to do environmental assessments of its scrubbers and that is going to take a long time to do. I would like your comments on that and what kind of environmental assessment you feel is required for the four major contributors of the 1988 plan or whether your suggestion that there be public scrutiny and some scrutiny in total of the submissions in 1988 would obviate the need for separate environmental assessments of various components of the plan.

Mr. Perley: One of the main reasons that environmental assessment and hearings are necessary for Hydro is, if it is going to use scrubbers, chances are at least some of the units are going to produce byproducts, and we have to look at the waste disposal question carefully. What that means in our mind is to look at ways which will allow the use of scrubbing technology and proper and efficient waste disposal. There are various kinds of scrubbers that produce various amounts of waste, and depending on what plant and boiler configuration you have, you can use one or the other.

We simply feel that a complete airing of that is necessary. I think our submission speaks for itself there. I do think, though, that public scrutiny of the other programs is equally important, simply so the public can be sure that Inco's acid-making technology, pyrrhotite separation or whatever it decides to use, is efficient and that what Falconbridge is doing is efficient and effective.

Mrs. Grier: Were you talking about a full Environmental Assessment Board hearing with studies by everybody? One of the arguments against an environmental assessment is always the time it is going to take. I guess I am expressing my worry that somehow, as we ask for more scrutiny, it is going to be used as an excuse for not meeting target dates.

1520

Mr. Perley: I have not seen any indication in any official documents that there should be any threat to meeting the target at this point. If there is some threat, I would like to see it conclusively documented and independently analysed by the ministry and perhaps by outside authorities. If Hydro or anyone else is saying that, they should clearly say it and give the rationale rather than make vague statements or whatever. I am not sure they have made any, but there should not be any statements of that allowable or permissible in this context without clear, concrete evidence demonstrating that they are the case.

Mrs. Grier: You talk about independent public monitoring of emissions. I wonder if you will expand a little bit on the mechanism by which you see that happening. Who would be doing it, and how would it happen?

Mr. Perley: We are wondering whether the Ontario Research Foundation might take a hand in that; it is an independent body. Again, we think back to previous examples of monitoring that really did not satisfy the terms of regulations. We think of some of the controversy over whether deposition in Ontario went up or went down when Inco was on strike a few years ago. There was a controversy about that, and there have been other controversies about monitoring. We just feel that an independent agency can add an independent quality to the monitoring and a guarantee that the data are being collected and disseminated by a body with no axe to grind. It is really that simple.

Mrs. Grier: You used a phrase about sensitive areas. When the ministry was here, it showed us its maps of the areas of Ontario that were supersensitive to acid rain. I gather that the target level of total deposition is to some degree based on the analysis of what areas are sensitive and what areas are not--the 20 kilograms per hectare; am I right in that?

Mr. Perley: That is the target that is picked as the one that is necessary to protect moderately sensitive ecosystems. There are some ecosystems, extremely sensitive ones, that would not be protected by that level of deposition.

Mrs. Grier: But in the definitions of sensitive areas and looking at the ecosystems, there is no inclusion of human settlement. As we get the health studies and more and more evidence about health, I am wondering whether we need to redefine our sensitive areas and whether Metropolitan Toronto, with its concentration of population, is almost as sensitive as Muskoka but for a different reason.

Mr. Perley: There is a good way to look at that, which is the fact that the way you measure impacts on human health of airborne acid pollutants is to indicate what levels of airborne concentrations in parts per million are required to protect the most sensitive population; so while we are talking about fallout for aquatic and terrestrial systems, we are talking about airborne, breathable material for humans.

The US EPA is in the forefront of developing some of the strictest criteria in the world to protect sensitive populations. In this case a

sensitive lake equals an asthmatic, if you like. The US EPA is in the forefront of proposing and studying the most efficient and protective airborne concentrations, and I think we should be taking our lead from them when we look at, for example, what airborne concentrations might be created by emission exceedances allowed under the banking system.

Mrs. Grier: Mrs. Marland had mentioned the great step forward when the Ministry of the Environment was formed. There would be some of us who might say sometimes that having formed the ministry nothing much happened afterwards. In your comments that targets must not be weakened and targets must be enforced, do I sense a semblance of the same suspicion, that the announcement of Countdown Acid Rain might be seen as having solved the problem unless something is done to make sure it is lived up to?

Mr. Perley: Again, we have on the one hand regulations based on science and on the other hand the political decision-making process, which is not always scientific in nature. I am not here to criticize that process but simply to note that changes can be made and have been made in the past certainly, for less than scientific reasons, to regulations impacting the environment. We would simply like--without casting disrespect on anybody who might be in power in a few years or might not be--to have it guaranteed in nonappealable regulations that certain things happen. That way, if somebody wants to change something that has been agreed to--and I do not think there is any disagreement with these targets--then they are going to have to go through intensive public scrutiny to prove why they feel it is appropriate to change them. That is all.

Mr. South: Mr. Perley, I would like to go back to the point Mrs. Grier raised about independent monitoring, which is on page 13. Is there a suggestion that the Ministry of the Environment does not have the competence or the integrity to do the monitoring?

Mr. Perley: I do not think we are suggesting there is a question of competence or integrity. We are simply stating that, given the extreme importance of this program, both in Ontario and bilaterally, and the need for it to serve as an example for our American friends as well as ourselves in the years to come, it behooves us to take all possible steps to ensure the independence and scientific objectivity of the evidence, that is, the monitoring data. While the ministry is going to collect that data and disseminate it, it does not hurt to have a little bit of extra credibility associated with the collection of the data in the form of its collection and review by an independent monitoring agency at least. That gives us airtight, ironclad credibility.

The ministry is a good agency in its monitoring functions. There is no question about that. This is insurance and an extra guarantee that nothing can happen in this program that will not be of the highest scientific objectivity should there be any question about the program's integrity in terms of the other provisions that will not be fully available for public scrutiny.

Mr. South: I really have the sense that our Ontario Ministry of the Environment has attracted some of the best people in the field.

Mr. Perley: I agree.

Mr. South: I just wonder whom we would have overviewing them. One starts to get concerned about having experts looking at experts and the escalation that follows. It soon becomes a cottage industry with the lawyers and the experts and the experts on experts.

Mr. Perley: We will specifically request that no lawyers be involved in this. It is extra insurance. We are operating on the presumption this is perhaps the province's most important environmental program of the moment and, therefore, if there can be a little layer of objectivity, let us do it, because we are not just doing it for domestic consumption but for our American friends to scrutinize, as they inevitably will and have been doing right down to the bare bones of the program. It will not hurt to have a little extra insurance. I take your point, though, about the experts.

Mr. South: Thank you.

Mr. McLean: I have been led to believe that Ontario Hydro would not have any problem meeting its deadline of 1994. I do not whether that is what you have observed or believe would happen. Why has the banking program come into place all of a sudden?

Mr. Perley: That is a very good question. If there is no problem meeting the target, why do they need legal permission to exceed the target? There is a certain doublethink involved here which we have a very hard time with.

Your question implies that if they are going to meet the target and they say they are going to meet it, then let them meet the target. Do not give them legal means to avoid meeting the target for some relatively unspecified reason without any criteria for the circumstances of that.

Mr. McLean: Are they saying this is part of the deal now and that they want to have this banking process in place?

Mr. Perley: It is there in the regulation.

Mr. McLean: I find it totally unacceptable. I do not think it should be there at all.

This morning we had some discussion with regard to the forests, the trees and Ontario's forest products for the future. You had a spokesman from your coalition group speaking on it. What would be his observation of the decline in growth over the next century because of the effect acid rain is having on forest products?

1530

Mr. Perley: Speaking on Mr. Foucault's behalf, who cited the statistic, I believe roughly over the past 30 to 40 years there has been a 60 per cent decrease in the rate of growth of trees. That is at current emission levels. In some cases a number of years ago, emission levels were higher than they are now but not all that much higher. If you extrapolate that to the next 40 years, say, you could look at perhaps another 40 to 50 per cent decline.

The question that has to be asked is not only what is the percentage decline but also at what point does the decline reach such an extent that the forest is no longer viable, when it no longer produces trees of a size of use to the forest products industry, which maintains our outdoor recreational environment in a suitably pristine state. I do not think anybody is able to predict that.

The general comments from scientists that I have seen indicate that with anywhere from 10 to 30 years of deposition at current levels, more parts of the eastern North American forests are going to be in serious trouble.

Mr. McLean: I will go back to banking. Do you know whether or not the Minister of Energy (Mr. Kerrio) is supportive of the banking system proposed by Ontario Hydro?

Mr. Perley: It is in the regulation, and in the recent past I do not think we have seen any statement from the minister. We will look forward to his views on that subject in the near future.

Ms. Hurley: They certainly were involved in the cabinet discussions that occurred in December 1985 when this regulation was brought into being. Energy was a main player in the cabinet discussions that were reported in the press--I believe it was the Toronto Star--at the time.

Mr. McLean: Why would not the Minister of the Environment (Mr. Bradley) object to such a regulation being put in to hamper what he has been proposing as a strong environmental program in the province?

Ms. Hurley: Perhaps he did, but I am not privy to cabinet discussions.

Mr. McLean: The cabinet can change regulations as it sees fit. You have been talking about having a great input, but your coalition will not have any input if it is just in the regulations, because they can change that at any time. Is that not correct?

Mr. Perley: They can be changed. We hope when the committee writes its report that it will take into account that our submission does recommend the removal of this banking provision and make those recommendations to the government.

Mr. McLean: Does your coalition have a promotional program aimed at the American population with regard to the concern you have raised?

Mr. Perley: We have just received a \$25,000 grant from the Canadian National Sportsmen's Shows, which we are going to use to prepare a pamphlet which will summarize our concerns with respect to acid rain in the US and the problem it is causing there. We will fold in the human health data and we are going to disseminate that through the National Wildlife Federation, which has 4.5 million members in the US, and other constituency groups we work with. We will continue our work with Congress. We are working actively with groups in Pennsylvania, which is a key state for us to have in terms of emission reduction, and we have a few other initiatives we will be pursuing over the next year or two to get the information out and get those constituencies mobilized.

Ms. Hurley: We also worked with the Ministry of Natural Resources on a nonresident angling licence inclusion, a perforated tearoff, which will reach 700,000 Americans who take out these licences in Ontario this summer. The tearoff will have some information they can read and questions to fill out on one side, which is addressed back to the Ministry of the Environment with the postage amount already on it. The Ministry of the Environment will turn out further information to those people who write in. There is that campaign.

Last summer, when Americans who have cottages in the Muskoka, Haliburton and Georgian Bay areas were here, we had a radio advertisement campaign that was carried on CHAY radio station, one of the few stations you can receive in the Muskoka area. That was directly targeted at a particular piece of legislation in the House side of Congress, Bill HR 4567, which has since died.

That kind of campaign is taking place wherever we have a piece of legislation that we want to focus on while we have Americans in this country. Ironically, many of those American summer guests or visitors are from the states that are the largest polluters. They are mostly from Indiana, Pennsylvania and Ohio and are up here for the summer.

Mrs. Marland: You just said that the tearoff portion goes back to the Ministry of the Environment. Does the MOE then respond to those people?

Ms. Hurley: Yes. We felt this was actually the most straightforward way of doing it. The Ministry of Natural Resources sells the licence, but it is really MOE that has most of the ministerial authority on the issue of acid rain and produces pamphlets or brochures such as Countdown Acid Rain. It conducts a large part of the scientific research.

Mr. Bradley's office worked out an arrangement with MNR that MNR would provide the licences with this information, but the MOE would provide the follow-up. We were very pleased with that.

Mrs. Marland: Are you going to vet the responses that are going to be sent? You have obviously been given this mandate by the \$25,000 contribution from the Sportsmen's Show, so it is in your hands, as representatives of those interests. I hope you are going to have a very clear view of what is going to be mailed back.

Ms. Hurley: We do.

Mrs. Marland: To be very blunt, it should not be partisan for one thing.

Ms. Hurley: That is right.

Mr. Perley: We have had that concern ever since we began our work.

Mrs. Marland: It has been given totally by the public at large through the Sportsmen's Show, and I respectfully suggest it should not be political. When you said the MOE is going to respond, will it be after you approve it?

Mr. Perley: It is not after we approve it. We have seen the Countdown Acid Rain material, which is part of a package. It simply sets out the objectives of the program, the rationale for the program, the targets, the scientific evidence backing it up. It is not that bad a piece. It will help to show that Ontario has acted, but that we still have a serious problem that originates in the US in part.

Our pamphlet, when we finish producing it in a couple of weeks, will be part of a package as well. We will be outlining our concerns. It will be mainly focused for US consumption. It will not be talking about Canada's concern as much as it will be talking about the problem in the US. It is our belief that if you want to get the Americans to act, you have to prove that they have a problem on their own turf; otherwise, they will be less than enthusiastic.

Ms. Hurley: We are very sensitive to this, Mrs. Marland. In the past, especially in the years when we had our Washington office, we used to receive material sometimes from Ontario, but for the most part from the federal government through our embassy. The whole story was not always there.

There was a great amount of material provided for and paid for by the Canadian public that we simply could not use in Washington. At a certain time, I recall we became very anxious about it, if not angry, because we had such a need for the information and here was all this paper arriving in boxes, none of which we could disseminate.

We are also registered in that country as foreign agents; so we have to file everything in triplicate with the US Department of Justice within 48 hours of putting anything out. We are very careful about what is put out, who writes it, whether our imprimatur is on it and how we would be prepared to defend or explain it if called before the department.

Mr. Perley: I can remember one instance where Marcel Léger, then Quebec Minister of the Environment, was quoted on Morningside as saying that Quebec had a 50 per cent reduction under way. There was no regulation there at all; there was nothing. We could not use that information. There were statements of that kind that were made by many elected officials, I must say, of many parties--I am not zeroing anybody out--about what Canada was doing.

It was all under the guise of statements of intent and principle. The regulations were not there and only began to be there in early 1985. Up to that point, we had a real problem, as Adele Hurley said. We could not use a lot of the propaganda that was being produced because it had no substance to it. It was all very well to produce statements of principle, but unless there were regulations, financing, penalties and timetables there, we could not use it.

1540

Mrs. Marland: Would it be your greatest joy if one of the recommendations this committee took back to the Legislature was to remove the banking provisions and banking credits or however we want to refer to that marvellous system, if we were to recommend they be removed from the provisions?

Mr. Perley: We would be delighted.

Mrs. Marland: I do not think we would have any difficulty getting a majority of this committee to support that. You have heard the comments of Mr. McLean and Mrs. Grier, and I know that I agree totally, about how ridiculous the banking system is--and I certainly think Mr. Partington would agree. Hopefully, we would not have any trouble getting that recommendation as part of our report.

How do we help you with the problem of New Brunswick and Nova Scotia, now that we have solved part of Ontario's?

Mr. Perley: Now we are talking about a serious problem.

Mrs. Grier: Now that your party is going to remove the banking here, maybe it can work on the other governments.

Mr. Perley: Premier Hatfield and Premier Buchanan have a great deal to say in this matter, and it was their environment ministers who agreed to the programs, which involved very modest emission reductions for those two provinces in 1985. Premier Hatfield and Premier Buchanan are still there today, and their ministers are indicating one way or another that either they do not want to abide by the program or they require a whole lot of federal financing for the program, in the case of Nova Scotia, in order to achieve these modest reductions, and I was never part of the deal.

In early 1984, the provinces took on the responsibility of regulating, financing and taking care of utility emission reductions. That was agreed to by the federal and provincial ministers. The federal government agreed to take the lead on smelters; hence the \$150-million smelter cleanup fund that was provided by the federal government in 1985.

By not passing regulations implementing the very modest reductions agreed to in 1985, what New Brunswick and Nova Scotia are doing is breaking that agreement, breaking the 1985 agreement and also breaking an agreement that the eastern Premiers and the New England Governors made in September 1985, where that group said collectively, "We will reduce emissions in this region by 30 per cent." Not to implement the reductions required by the 1985 agreement will break all three of those agreements.

We have already had one call a few days ago from the Detroit Free Press, which is the major newspaper in John Dingell's district. He is chairman of energy and commerce in the House of Representatives and a determined critic of acid rain control legislation--

Interjection: And of Canada.

Mr. Perley: --and of Canada, and has been for years. He was asking just precisely what is going on with New Brunswick and Nova Scotia, why they are not doing their part of the agreement and why they are backing away. In short, the US media are getting on our case.

The summit is coming in a month. It would be very helpful if this committee could make its concerns known directly to Mr. Hatfield and Mr. Buchanan and ask them please, without any further ado, to indicate that their provincial utilities and other sources will, to the extent agreed to in 1985, implement a reduction program to be achieved by 1994 through regulation, so that we can show anyone from south of the border who cares to look. We can say: "We have agreements here. We have regulations signed, sealed and delivered. Now it is your turn." It would be extremely helpful if you could do that as soon as possible.

Mrs. Marland: It is interesting when you say the US media are coming in a month. As you know, we were in Sudbury yesterday and we heard they had been there the day before.

Mr. Perley: Yes, exactly.

Mrs. Marland: You are going back to Washington next week?

Mr. Perley: The week after next.

Mrs. Marland: The Senate environment and public works committee is the one that is sitting now?

Mr. Perley: Yes.

Mrs. Marland: Are you going to be talking to that committee or just sitting in on the hearings between today and when you come back to us?

Mr. Perley: If they have a hearing that week, I will certainly be sitting in on it and we will be keeping in touch with staff members. In particular, we will want to see Mr. Byrd's staff people. I look forward to that visit and also to visiting with some of the other members, notably Mr.

Mitchell, who is the environmental pollution subcommittee chairman. His subcommittee heard the health data a month ago. I look forward to being able to report to you on that series of meetings when we come back in April.

Mrs. Marland: Are you meeting with our Ministry of Health on the health data question?

Mr. Perley: That is something we are going to pursue, definitely. We have met at prior times with the Department of National Health and Welfare. It is unfortunate that Dr. Franklin and Dr. Stern were not able to be with you. I gather they were not able to come.

Mrs. Marland: They are coming later, are they not?

Mr. Chairman: We are still trying to confirm the appearance of Dr. Stern, Dr. Franklin or Dr. Bates. The first date we had suggested to them was not appropriate. It is a matter now of finding when may be an appropriate time. We are pretty well full up. We may even have to ask the coalition if it might be prepared to share some time on April 15, if that is appropriate to get them here, or other deputants, because we do not have much time. We would like to get them here.

Ms. Hurley: Could I just comment? It would depend, I suppose, on whom you were asking us to share the time with. We would be pleased to yield time to Dr. Bates.

Mr. Perley: Absolutely delighted.

Ms. Hurley: Dr. Bates has worked under contract, ironically, for the Environmental Protection Agency, although he is a Canadian and a former head of the Science Council of Canada. He has conducted research to show that when the wind system is from the Ohio Valley and comes this way, we actually get increased hospital admission rates for asthmatics in the Windsor to Peterborough corridor. I think this committee will find his testimony extremely valuable.

Mr. Chairman: Perhaps, Adele, you might help us somewhat. We have not to this time been able to make contact with Dr. Bates. He is out of British Columbia somewhere.

Ms. Hurley: Okay. I have a feeling he is in North Carolina right now.

Mr. Chairman: If you folks with perhaps some more direct contact could apprise him or our clerk, they could get together on that. We would be delighted to have him share a part of your time too.

Ms. Hurley: Okay. We will get back to you with that tomorrow.

Mrs. Marland: It is entirely possible, is it not, that when we get to those dates, we may as a committee agree to sit a little longer in order to accommodate the important submissions that are yet to come?

Mr. Chairman: I do not pretend to speak for this particular committee. I am sure they will advise me as to their thinking on that.

Mrs. Marland: Could we not consider it?

Mr. Chairman: Certainly. The chair is always flexible enough to consider scheduling at some time, although we looked at it very carefully at the beginning. We will try to make sure Dr. Bates is contacted and fitted in.

Mrs. Marland: Could I just be clear about that? Mr. McLean was saying the time is set. I know the days are set, but are the hours also limited?

Mr. Chairman: They are not. The bottom line is we want to have Dr. Bates or Dr. Franklin or Dr. Stern or certainly someone there. What we will do is make sure we can get them slotted in through co-operation with the coalition or others.

Mr. G. I. Miller: We have had the opportunity, through the Canadian Coalition on Acid Rain, to look at Ontario Hydro. We had a chance yesterday to look at Inco and Falconbridge. Ontario Hydro is moving ahead with experimenting with scrubbers. I think they are having some trouble deciding what type of equipment they should be applying. Do you not feel if we really want to send a message to the US, if we show we are trying to remove and improve our facilities, that is perhaps the best signal we can send?

We have tried to document the damage that has been done to the maple forests. Quebec has a handle on that, but Ontario does not seem to have too much of a handle on what damage we are really talking about.

Mr. Perley: Not as much as Quebec does.

1550

Mr. G. I. Miller: We had the mayor from Muskoka this morning indicating the damage it is doing to the tourist industry and the fishing industry there, but we really do not have a dollar figure on that.

The other thing that came out very clearly yesterday was the financial position of Inco and Falconbridge and the overall markets. I suppose that is probably what Byrd is saying about cost from the US point of view. Can our economy stand it at a time when we are on thin ice? I guess the question we will be wrestling with in this committee is how can we influence our American friends to the south, how can we influence the other ministers to provide some cleanup facilities and justify those costs.

Do you have any feedback or some answers that might be usable by the committee?

Ms. Hurley: I just have one comment the committee should bear in mind when we get comparing Canadian and US utilities to make sure we are looking at apples and apples. As you know, most of the US utilities are investor-owned. For example, American Electric Power, if it has to clean something up, would actually have to float a bond and would perhaps be talking about utility rate increases in the area of 10 per cent. It would have to float a bond and charge its own customers for that, unlike here, where we have this publicly owned utility and can spread our costs over the entire province, therefore keeping the rate increase rather minimal.

We are in an even better position here--I think we should be fair about it--to be cleaning up. Therefore, we have two good reasons to clean up. We have the obvious reason of protecting the environment, but because we have a publicly owned utility we also have an awfully good base to spread those rate increases over. To put scrubbers on some of these plants or whatever they ultimately decide they require, you are talking about an increase of a couple of per cent.

Every time we go to the public opinion polls and ask, "Are you willing to pay?" people are getting to the point now where they do not want to be polled any more. People just want to know why they are being asked time and time again if they are prepared to pay when what they keep saying is: "Charge me. I am ready, I am willing."

As I think we have been noticing, it could work the other way around, whereby people would be angry in this province--I guess you could call the people of Ontario shareholders in this crown corporation--if they found out we could have controlled acid rain for a couple of percentage point increases or a couple of dollars a month and we did not do it. We should see it that way.

Mr. Perley: We should also think in the American context of the good example we could set or the bad example that would be set by a province that owns the utility. If we cannot do it right, owning the blasted thing, what can we expect from our American friends whose utilities, as Adele noted, are investor-owned and who are not as directly under the aegis of government control that Ontario Hydro is. If we cannot do it here, then our failure through allowing things like banking provisions becomes even more significant if we own the thing in the first place.

Mr. G. I. Miller: Have you done any research on the scrubbers in the south? I understand since some time in the 1970s, they have had to apply scrubbers in Ontario.

Mr. Perley: Yes.

Mr. G. I. Miller: I guess Nanticoke is a good example. It only came on in 1975 and we were not applying that technology to that plant at that time.

Mr. Perley: There was no need to because there were no regulations at the time.

There was an article in the Star this morning or yesterday about the successful testing of this unit at Lakeview, which I think you all saw.

Mr. G. I. Miller: That is right.

Mr. Perley: That bodes well, along with a number of other different kinds of units that are in operation in the US and elsewhere. Also--and I will be pleased to supply this next time we are here--there is a study by an independent consulting firm in Washington showing that acid rain control legislation can produce significant benefits in job creation, product sales and prices in the US on a state-by-state basis. There is information showing that pollution control can be profitable and I would be happy to supply that.

Ms. Hurley: Including in Mr. Byrd's district.

Mr. Perley: Exactly.

Ms. Hurley: There is a net increase in jobs, according to the chairman of Westmoreland Coal in West Virginia, if that country passes acid rain control legislation.

Mr. G. I. Miller: I can see that happening in northern Ontario with Inco and Falconbridge, their old plants. There are lots of jobs there, but it is a matter of getting enough funding to achieve that. There is tremendous work potential.

I suppose there would be other potential in using some of the sulphuric acid in fertilizer for agriculture. I have heard that discussed for a long time since I have been in the Legislature, maybe 10 years, and what it would generate. Again, we have to look at the agricultural industry, which would be a strong supporter of that, and it is not in a strong position. It comes down to financing and putting this together to make it financially viable.

Ms. Hurley: I should mention that the Canadian Federation of Agriculture is a member group of this coalition--

Mr. Perley: So is the Ontario Federation of Agriculture.

Ms. Hurley: --and wanted to be here today, but this is its annual meeting in Ottawa these past couple of days.

Mr. Chairman: I would like to thank Jean, Roly, Bob, Adele and Michael for presenting your concerns to us today. We will see you back on April 15.

Adele, if you would not mind making sure that we get Dr. Bates's present whereabouts, so that we can contact him and make sure we have someone here to talk about health.

Just before we adjourn, I would like to mention to the committee that we will be meeting here in this room all next week. We have made contact with some experts and I will mention who they are. These are all professors. On Tuesday, in the morning, we will be having Professor Don Dewees, whose expertise is in economics and law, and Professor John Shaw, whose expertise is in metallurgy. In the afternoon, it is Professor Phillips, whose expertise is in atmospheric conditions, and Professor Keffer, who is a mechanical engineer.

Mrs. Grier: Are they to address the question of technology?

Mr. Chairman: They will be critiquing the Countdown Acid Rain program. I suspect will come at it from various interesting ways and we can question them on those ways.

The committee adjourned at 5:58 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

TUESDAY, MARCH 10, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. L. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Cooke, D. R. (Kitchener L) for Mr. Henderson
Epp, H. A. (Waterloo North L) for Mr. Poirier
McLean, A. K. (Simcoe East PC) for Mr. Eves
Pouliot, G. (Lake Nipigon NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

Individual Presentations:

Deweese, Dr. D. N., Professor of Economics, Professor of Law, University of
Toronto

Shaw, Dr. J. M., Professor, Department of Chemical Engineering and Applied
Chemistry, University of Toronto

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Tuesday, March 10, 1987

The committee met at 10:10 a.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: Good morning, members of the committee. Today we have four deputants. It is hoped we can allow each of the deputants an hour. With the co-operation of committee members, I am sure that will be accomplished.

Our first deputant is Professor Don Dewees from the University of Toronto. Professor, would you mind coming forward? I believe you have a presentation that you would like to make first and then you will invite questions from the committee afterwards.

I will indicate to the committee that in the interests of making sure we adhere to our time scheduling, save for questions of clarification, we allow the professor to complete his presentation before we entertain questions.

DR. DONALD N. DEWEES

Dr. Dewees: Thank you very much, Mr. Chairman and members of the committee. If I manage to make it through the presentation with no interruptions, it will be the first time in my academic career that has happened, but I look forward to that here.

I believe I was invited to speak to this committee by the staff because of my experience in environmental matters. I have been a professor of economics and a professor of law at the University of Toronto for 15 years, teaching courses in both environmental law and environmental economics. In the early 1970s, I was a director of the Sierra Club of Ontario. I was the director of research for the Ontario royal commission on asbestos from 1980 to 1984. Much of my research work has been involved in dealing with environmental matters and environmental policy.

My comments this morning are going to deal first with the overall limits prescribed in the Countdown Acid Rain program and then with what I perceive as some problems in that program that this committee might address itself to.

First, with respect to the overall limits in the program, I believe those limits are reasonable. I think they set an achievable but tough goal to be achieved by 1994. It would be reassuring if we could be confident that by 1994 sulphur dioxide emissions would be 50 per cent or less of those emissions in 1980. It would be reassuring if the countdown program were a model for other provinces to use and for us to show to the Americans as the appropriate direction to go in dealing with the problems of acid rain.

Unhappily, I am not confident that the goals embodied in this program are going to be achieved by the legislation and regulations that are currently in place. My doubts arise from a set of problems including banking, costs of control, enforcement of regulations, subsidies and the way the program deals with small sources. I will deal with each of these matters in turn.

Under banking, there are two different provisions. One is forward averaging, allowing Ontario Hydro to emit more now in anticipation of reductions in the future. I see problems with that forward averaging, because it means the government cannot assure the people of Ontario what the emissions will be in any particular year. In fact, I expect Hydro can put together a very convincing and compelling case at any particular time that emissions in the future will fall, a case sufficient to induce the government to grant some forward averaging.

However, there is nothing that would ensure, given the uncertainties in this business, that those reductions in the future would occur. It is entirely possible that forward averaging could be used with good faith on both sides, yet by the end of 1994, the goals of the program might not be achieved. That is, Hydro may have taken money out of the bank, taken emissions out of the bank, and never managed to get them back in.

That provision is going to look like a loophole to other provinces and to the Americans. When you have this much flexibility, it is going to undermine the overall credibility of the program. I recommend that the forward averaging be deleted from the regulation for Hydro.

The other part of the banking program is allowing Hydro to accumulate credits by reducing its emissions now and to use up those credits later; put credits in the bank and take them out later in the program. Hydro insists that the flexibility of this banking provision is important, given the uncertainty in electrical demand and uncertainty about which generating units are going to be available at any particular time.

The problem with banking, once again, is that we can no longer be sure what total emissions will be achieved under this program in any particular year. While, if the provisions are properly used over the period now to 1994, we know the total discharge, we do not know what it would be in 1994, in 1992 or in any other year.

Once again, I think this weakens, although not as much as the forward averaging, the credibility of the program. It does not allow us to provide guarantees to the people of Ontario, to other provinces or to the Americans as to what the emissions would actually be in a particular year.

I propose two alternatives to the banking provision. I propose these on the assumption that Hydro is correct that it is useful to have some flexibility and that there are risks in being tied rigidly to the emissions that are set forward in the program as the regulation currently stands.

The first proposal that I would like to make allows flexibility over space rather than over time. What the banking provisions do is allow a single source to shift emissions from one year to another. The problem is, that may increase emissions in any particular year.

The other alternative is to allow shifting of emissions from one source to another within a given year. That leaves the total emissions for that year unchanged. My proposal I call trading emission rights. Let me explain for a minute what I mean by that.

The existing regulations essentially grant a right to emit to each one of the regulated sources. The numbers are specified. There are limits to this right to emit, but this program gives a right to discharge pollution, just as any regulation gives a right to discharge pollution, by denying the right to

discharge more than the specified amount. So pollution discharge rights are being distributed in the program as it stands.

My proposal is that in any year any one of the regulated sources could trade or purchase pollution rights for any other source for that year. Thus, if Hydro found itself in a bind for 1989, it could approach Inco, Algoma or Falconbridge and propose that it receive some of the allowable discharge from that source. Presumably, they will be asked to pay something. So they buy some rights. Remember this does not change total emissions in the year; it just reshuffles them among the sources. That provides flexibility for each individual source without in any way weakening the commitment that the program has made to a total emission rate for any particular year.

The other alternative, in addition to trading of emission rights, which would be a replacement for banking, would be to retain the banking provision but impose a charge for any withdrawal from the bank. We are all used to bank charges. This would be a special charge. Hydro accumulates credit in the bank by discharging less than its allowed amount in any year. When Hydro wishes to exceed its allowed amount and draw down on those credits, my proposal would require that Hydro pay to the ministry, into the general treasury, some amount per tonne of discharge to be withdrawn. It is like a tax or a charge for withdrawals from the bank. That will tend to discourage Hydro from requesting those withdrawals.

I understand that under the current program withdrawals may be made only by application by Hydro and that there would be hearings and discussion as to whether it was appropriate. Every time I look at the documentation such as that submitted by the sources regulated under this program, I find it is difficult to assess the merits of any particular proposal. They say it is tough to control further. They say it is too expensive. They say they need it. How do we know otherwise? These things are not easy to read. Even the experts are going to disagree. I think it would not be hard for Hydro to put together a compelling case in any year, but government would find it difficult to resist allowing withdrawal from the bank. Hydro's bottom line will always be, "Tell us which buildings you want dark next year and we will not exceed our emissions limit," and nobody wants to take responsibility for buildings being in the dark.

1020

My proposal, a charge for withdrawal from the emissions bank, would place the burden back on Hydro. If it is prepared to pay the price, it can make the withdrawal. This still does not increase its total emissions over the life of the program, and it restricts its enthusiasm for asking for withdrawals from the bank. With respect to the two banking provisions, I am proposing these two alternatives.

Let me turn to my second problem after banking, the problem of costs. It is clear the program proposed here is going to be very expensive. Hundreds of millions of dollars are going to be spent between now and 1994. Hydro is talking about billions of dollars. It is clearly costly to control acid gas emissions. When a government regulation is going to impose literally hundreds of millions or even billions of dollars of costs, it is very important that the regulation try to ensure the costs are no higher than necessary to do the job and that we do not waste any resources as we pursue the important goals of this program.

There is potential for wasting resources, for excess costs, in the

program as it stands now. That potential arises from the likelihood that in any given year the cost of control may be very different among the different sources. Why does that waste resources? Let me give an example. Suppose in any particular year Algoma could reduce its emissions further for \$100 per tonne and Hydro could reduce its emissions further at a cost of \$1,000 per tonne. We waste resources by not allowing Hydro to control less and by not inducing Algoma to control more.

In my example, every tonne of pollution control shifted from Hydro to Algoma will save \$900, the difference between the \$1,000 cost at Hydro and the \$100 cost at Algoma. There is nothing in the program that ensures these big cost disparities will not occur at any time or at all times. At any time they do arise, we are wasting money in achieving the goals of the program.

How can we reduce the likelihood of this sort of waste? How can we control the cost as much as possible? Again I go back to emissions traded. Suppose we allowed a source to purchase some of the discharge rights from any other source in a particular year. As I have said, that does not in any way alter the total discharge in that year, but in the case I have given it would allow Hydro, the high-cost controller, to purchase some rights from Algoma, in my example the low-cost controller, saving money for everybody in the interim. Trading marketable pollution rights leaves the environmental goals completely intact but raises the possibility of considerable cost savings over the life of the program.

I have not looked recently at any studies of this particular problem, although the Ontario Ministry of the Environment commissioned a study which looked at least-cost ways of tackling acid rain, among other things, and it suggested savings could be achieved. Studies in the US of this sort of problem have suggested that cost savings approach half the cost of a program. I am not suggesting cost savings of that magnitude could be achieved here. I am only saying it is possible that very substantial savings can be achieved by allowing this trading of emission rights among sources.

I am interested in that, frankly, because I am concerned about achieving the goals of the program. Anything we can do to help the regulated firms control their costs is going to reduce resistance to the program and increase the chance that we are going to get the job done.

My third concern is with enforcement. Given the regulations we have here, we have to look at the history of the enforcement of environmental regulations to predict what are going to be the effects of these regulations. Perhaps with goodwill and hard work on all sides, the regulations will be met in every year between now and 1994, but then again perhaps not.

The history of pollution regulation in Ontario is a history of delay, debate, postponement, agreements written, agreements violated. It is a discouraging history. I am not saying we have not made substantial progress, but if you go back and look at the history of a variety of major regulations, you will find that timetables are delayed and delayed on many occasions for a variety of reasons.

This is not an Ontario failing. The same is true right across North America. The US Congress passed the federal Water Pollution Control Act in 1972, I think it was. Senator Muskie promised the American people then that by 1984 the waters would be clean. If you have been to the United States recently, you know that the waters are not clean. They are better, but they are not clean. The goals of that program have not been met by any stretch of

the imagination. There is a real risk they will not be met here. Without enforcement, these regulations are a scrap of paper.

What is the ministry going to do if, by 1988, when the last of the progress reports comes in, the reports have turned pessimistic; when the rather guarded, somewhat optimistic language of the present reports turns to gloom about the technology, the costs, the timing, the feasibility? What is the ministry going to do if, on the date that an emission limit has been reduced, the source says, "We cannot do it"? Is the ministry going to close them down in August for the rest of the year?

Is the government going to prosecute, taking advantage of the higher fines and other penalties the ministry has been putting in place? How long does it take to prosecute a firm? We know the limits of prosecution as a means of enforcing environmental regulations. It takes a long time. The courts do not always impose stiff penalties and there is a due diligence defence. After the Sault Ste. Marie case, if the polluter can demonstrate what is known as due diligence in his efforts to comply with the regulation, then he may not be convicted. That is a defence to a charge of violating the act.

There is a real possibility that right now these sources are in the process of laying down the groundwork for a due diligence defence any time the regulations begin to bite.

Mr. Chairman: Mr. Wiseman wanted a clarification.

Mr. Wiseman: For the sake of those of us who are not lawyers or do not know what that means, could you tell us in simple language what that defence really is?

Dr. Dewees: The way the due diligence defence arises is this: The ministry charges a source with having violated some regulation or act, say the Environmental Protection Act, section 13. In court, the ministry proves that the discharge was made, that the pollution was harmful and therefore on the face of it, the EPA was violated. The source then comes in and tries to establish that it has exercised due diligence. What it tries to do in establishing due diligence is to show that at all times it was doing the best it could to control the emissions, to avoid the discharge that actually took place. If it manages to prove that to the satisfaction of the court, then the court will not convict the source of the violation. It is not saying that the violation did not occur, but that it cannot be convicted.

This is a halfway step between something like a parking violation where it does not matter what your intention was or what your excuse is; if you parked in a no-parking zone and you are ticketed, you have to pay the fine. That is the one extreme. There is really no defence.

The other extreme is in serious criminal offences where you have to prove the intent of the guilty party. It is not murder if you did not intend to do the act, if you did not intend to kill the person. If the gun went off accidentally, you shot him, but it is not murder. You need intent for the serious criminal offences.

For these regulatory offences, the Supreme Court in 1978 set up something in between. You do not have to prove a guilty intent, but you do allow the violator to get off if he can demonstrate he was trying hard not to do it. That is the due diligence defence. Is that at least clear enough?

Mr. Wiseman: Yes, fine.

1030

Dr. Dewees: I am not suggesting that the due diligence defence is wrong; I am suggesting that it often can be used as a means of getting out of conviction. We should not assume, because the regulation specifies a numerical limit, that anybody who discharges more than that limit is necessarily going to be subjected to the maximum penalty the law allows.

These are the problems we have with current enforcement techniques, the practical problems of whether you go after somebody and close him down and the legal problem of whether you can convict in any event.

My proposal for dealing with the problem of enforcement is to ensure that any violation of this act is going to cause serious costs for the source. As an economist, I believe that paying money gets people's attention, that having to pay a charge for violating the regulations is going to induce compliance with the legislation and what I propose is called an emissions charge.

The charge would be calculated in a very simple manner. Any time a source exceeded the regulated amount--let us hope it never does, but it might--it would be required to pay, again to the government, an amount based on the extent to which it had exceeded that discharge. An amendment to the regulation would essentially set a price, so many dollars per tonne of pollution beyond your limit, and then, regardless of any other penalties or legal proceedings, there would be a requirement to pay that amount. This is not a criminal proceeding; this is an administrative procedure for collecting money. In the same way that we collect taxes based on income or net income, you would collect a charge for pollution discharge in excess of the regulated amount.

The advantages of this are twofold. Number one, it provides some certainty for the polluter that delay, postponement and stonewalling--going right up to the date and saying: "We can't do it. What are you going to do to us?"--are at least going to cost them a lot of money. It assists the government in giving it a middle ground between prosecution and backing off, saying: "All right, you could not do it. You can have another five years."

I am afraid that without some additional enforcement mechanism this program, looked at in the light of the history of pollution regulation, may be seen as a paper tiger. If the charge is substantial--and I would set the charge so that it is cheaper to control than to pay the charge--then we will find violations only when somebody has had bad luck with his controls or has stumbled on a problem. The payment of the charge will keep him working hard to achieve the desired solution.

The proposal sounds radical, but it is not without precedent. In Ontario and other Canadian provinces, some polluters pay a sewer surcharge. If you are hooked up to the municipal sewer system and you discharge a lot of heavy-strength waste, you pay a special fee to the municipality as a price for its treating your waste in the municipal sewage treatment plant. A number of municipalities have that program.

In the United States, the auto fuel economy regulations passed in 1975 by the US Congress--and administered by I am not sure whom--have built into them exactly this sort of penalty clause. It is not an offence. You simply pay

in that case \$5 per 10th of a mile per gallon per vehicle for the extent to which any corporation's cars do not meet the US fuel economy standards. That program has worked very well. Nobody has violated those standards in the nine years since they were imposed. It is very different from the history of automobile pollution control in the United States, which did not have this enforcement mechanism and which had the usual litany of postponement, delay and noncompliance.

Let me move on to the issue of subsidies. My instinctive reaction is that I am not crazy about subsidies for pollution control. I see the environment as a public good belonging to all of us. I am uncomfortable with the notion of paying someone to abuse it less. Having said that, I recognize the political attractiveness of using a subsidy program to minimize paying what we know will be very substantial costs associated with the control of acid gas emissions.

My concern is that the way the regulation is written the government has essentially put a pot of money on the table and invited all players to submit their best requests for as much of that money as possible. I am sure teams could quickly put together compelling requests that would exhaust the pot in a short period of time. If we are going to have a subsidy program, it is crucial that access to the subsidy be limited to cases where the program would not go forward in the absence of the subsidy.

I am not optimistic that traditional methods of listening to requests and trying to access them are going to be very effective in limiting the handouts under this program. My only proposal is that the money never be given on more than a 50 per cent matching basis to ensure that the proponent who wishes to spend the money is at least prepared to put up 50 cents on a dollar on his own behalf. That would tend at least to minimize the possibilities of waste or extravagance.

Finally, let me turn to the small sources. It seems to me this program really ignores the much larger number of small sources that discharge acid gas emissions in Ontario. The documentation predicts some reduction in emissions by those sources over the course of the program, but the reduction is modest. By the end of the program, the so-called small sources will emit 25 per cent of total acid gas emissions. I am not convinced it is fair or reasonable to have a program in which we wind up with 25 per cent essentially uncontrolled.

A defender of the program would say, "But all new small sources are subject to limitations." The problem with regulating new sources and not existing sources is that you have grandfathered the guys who are already there. That creates an incentive to keep them going and a disincentive to go to new sources. You have an old boiler and you are thinking of building a new one. Maybe you will keep the old boiler going for an extra 20 years because the new one is going to be a lot more expensive since you have to use low-sulphur oil or gas while the old boiler can use high-sulphur oil or coal.

The history of this sort of distinction, the new-old distinction, being tough with the new and relaxed with the old, is that it freezes things exactly the way they are when the regulation goes into place. Studies of this sort of regulation in North America demonstrate that turnover of capital and normal replacement of ageing equipment slows down, in some cases stops, when you put this sort of regulation in place. That is not a prescription for progress in environmental or other matters.

Again, I do not have a clear prescription here. My suggestion is that

the ministry and this committee give consideration to extending the kind of charge for excess emissions that I proposed to at least the largest of the small sources and to put a financial incentive in place for them to look around for some control technology or a cleaner fuel whenever that is economical. To ignore them is to run the risk of failing to achieve the goals of the program.

In summary, I like the overall thrust of the program. The goals are just right. I see the goals as a 50 per cent reduction, over 1980, in emissions by 1994 and developing a model program that other jurisdictions can use in tackling the acid rain problem.

We are one of the leaders in putting legislation in place. The Americans are still doing research or still talking about doing research. The other provinces are dragging their feet. Ontario is in a leadership position here. If we are going to lead, we ought to lead with our best, with a program that looks good not only on paper but one that we think is also going to actually work in the real world over time.

For the reasons I have suggested, I am not convinced this program is going to achieve those goals. I am not convinced it is a model and I am not convinced we will see these reductions by 1994. My proposals, which are principally scrapping banking, replacing that with some trading of emission rights and imposing a charge for excess discharge, will go a long way towards ensuring that the goals are achieved.

Thank you, Mr. Chairman and members of the committee. I would be happy to answer questions.

Mr. Chairman: Thank you, Professor Dewees. We have several questions coming forth from what was a stimulating presentation.

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Mr. McLean: First, you have indicated withdrawal of banking, and when I read through your brief, I noted your concern with regard to fees. I believe what you are doing is saying to Ontario Hydro or some of the major polluters, "If you pay a fee, you can continue at a reduced scale." I thought it was indicated to me during our tour that Hydro had indicated it could reduce its emissions by 1994 to where the ministry wants them, and that Inco and Falconbridge could meet the criteria laid down for them. Why then are we talking about banking? I do not believe it should be in there at all, nor do I believe that we should be talking about money payoffs and withdrawals. It is all public money and it does not matter if Hydro wants to make a payoff, it is still coming from us. Why have you dwelled on that aspect of a fee for every tonne of discharge that is used from its bank? Hydro has indicated to us it can meet our criteria. Why are you, in your presentation, allowing Hydro not to meet them and pay a fee if it is having a problem?

Dr. Dewees: I agree with much of what you say. My proposal is to scrap the banking completely. I agree with you 100 per cent on that. That leaves the question, is there a need for flexibility or is there not? If Hydro has agreed there is no need for flexibility beyond that, then even the trading of emission rights would not be necessary as a replacement for banking, although as I have indicated, there are other reasons for it.

If everybody has agreed he can meet the limits, then the charge I have suggested will be completely unnecessary. Perhaps that is the case. Frankly, I

would be gratified if I were confident that was now the case and would continue to be the case over the life of the program. I have not heard all the submissions you have heard and I have not been on the tour, so I do not have all that information.

I have retained some modicum of scepticism, if not about Hydro, then about some of the other regulated sources. If Hydro is prepared to scrap banking completely, fine, let us simply scrap it. I still want to suggest the fee, not for withdrawals from the bank, because there is no bank to put things into or take things out of, but as an enforcement tool for all the sources. If all sources meet the deadline, then there is no need for that extra tool.

Notice I have not suggested rolling back any of the existing enforcement devices. I do not want to weaken any aspect of the program. When I talked about enforcement and the charge, the idea was to add on to the existing arsenal one more weapon.

Finally, with respect to your correct argument that when we are talking about Hydro it is all the same money, it is all public money, with respect to the other sources and to enforcement, it is not all the same money. They would look very seriously at major charge payments. Even with respect to Hydro, I am not convinced that a requirement to pay a substantial charge for exceeding its standard would not cause some concern. It may all be public money, but my understanding of the way the government works is that if we took \$100 million from one ministry and transferred it to another ministry today, the first minister who lost would not say, "It is all public money." He would be screaming and yelling in cabinet about that change. Where the money goes, where it is sitting, matters a lot.

If Hydro found that it had to pay \$10 million or \$50 million in any year as a charge, whether for withdrawals from the bank or for exceeding its regulated limit, I believe Hydro would have to find that money through raising its rates or going to the government. There would be questions asked in the Legislature. I think it would have some impact even though, as you say, in the end it is all our money.

I am with you 100 per cent on scrapping the banking completely if it is clear to this committee that the flexibility that offers is not essential.

Mr. McLean: I agree with your brief with regard to the American government looking at the flexibility we would be allowing as a loophole. I hope it is not looked at as such because I think we have to be strict and enforce it.

Mr. Wiseman: Some of my questions are like my colleague's. I am not convinced that Hydro does not need some sort of banking from time to time. That is where I differ from my colleague.

If a nuclear plant were to go down, like we have had them down, and the coal-fired plants had to be geared up to meet that, you mentioned we would have to go through environmental hearings and one thing and another in order to bring their emissions up at some time. I do not think Hydro has the flexibility to do that sometimes. If it went down in the winter, most of us around this table would want to see Hydro continue, particularly if we were heating with electrical energy. There has to be some give and take there, providing it gets down over the total year to where it is supposed to go. I cannot see us saying, "You have to go through all these hearings," knowing how long it can bog you down when people out there are needing hydro almost immediately.

We heard from the hydro plant we visited last week that it just gears up for the heavy season in the winter. It is very low in the summer. I wondered about that.

You mentioned they could buy. One was a \$100 cost and the other was \$1,000 cost. That sounds good, but I just wonder how practical that would be. We heard from a lady from the Muskoka area that even if we get the emissions of the three or four big polluters in Ontario down, that means nothing to her. In Muskoka, that is less than a one per cent reduction in emissions, because most of them are coming from south of the border.

The other was subsidies. You have all these millions of dollars you mentioned that the four big polluters will have to invest in research and development. I have no problem with government imposing these regulations and saying we are prepared, providing it looks feasible, to give them some sort of assistance. I believe it should never go to more than 50 per cent, but we were told the other day if it was successful--and I hope they do not do it just because it will not be successful to get the money--then they have to pay it back. They may get some royalties from some of the other countries in places such as Europe that are not as far advanced as we are. They are looking to us for leadership, as is the United States.

You mentioned that something should be done with 25 per cent of the old factories. Being in business, I know that some of them were around for a long time. If you enforce that, I know you are concerned about job losses. Some of those old plants may be existing today, but if they had to put on all these controls, they would probably go out of business because they could not compete with the bigger ones. It is all well and good to want to achieve lower than 25 per cent overall or whatever, but somewhere along there we have to look at that.

I was glad to hear some of the people who came to talk to us, even the ministry people. If they really try to get down and cannot, do we want jobs, do we want them to close completely or do we want to work along with them to achieve the end we all want?

Dr. Dewees: That is a long list of comments. Let me try to respond to those.

Mr. Wiseman: I just made the list as you went on.

Dr. Dewees: You may have written faster than I can. Let me try to respond to those in order.

On the flexibility issue, I am certainly not in a position myself to say for certain whether Hydro can stay within its regulation over the period of time. I do not know what the probabilities are of nuclear plants going out or of needing to gear up the Lakeview station or any of the other thermal stations and so on. I am not an expert on that; I have to back off.

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My position is that if the committee is convinced Hydro does not need the flexibility, fine; let us do away with banking. If the committee believes Hydro needs flexibility--of course, that will be the committee's decision--I recommend that one of the two proposals I made be considered. One is trading of emission rights, so that in case a nuclear plant goes down and Hydro needs all its thermal generation, it will have somewhere to go; it can approach the

other sources and see whether there is a possibility of making a deal to allow it to increase its discharge without increasing the total discharge across the province. Failing that, paying a charge at least keeps the pressure on Hydro to get back into business in a way that complies with the regulation.

The second point was how effective this program is with respect to the overall acid rain problem. It is true that this program by itself cuts out only a fraction of the acid deposition in Ontario, but its importance goes beyond the direct pollution reduction that comes from looking at the emissions from these four regulated sources.

As I indicated before, I see Ontario in a position to take a real leadership position here. Nobody else wants to; so it is really left to us. The more compelling and impressive a program we put in place, the harder we can talk in Washington, in the US Midwest, where much of our acid gas emissions originate, and in the other Canadian provinces. If we have a program that looks wishy-washy, there are loopholes and escape clauses--and Lord knows what the enforcement is going to be--I do not think we have established the leadership position that we should establish, and we have not, therefore, assisted your correspondent from Muskoka in dealing with her problem, a problem which comes not only from Ontario but also from many other places. I think it is important to stake out a strong leadership position.

One view you could take of these regulations would be: Suppose these were being debated in the US Congress right now. Suppose the Environmental Protection Agency had proposed this sort of legislation be adopted for US coal-fired power plants in the Midwest. Would we be planning a celebration now, confident that in 1994 those emissions would be half of what they were in 1980, or would we be asking some of the same questions that you have perhaps asked and which I have been suggesting this morning about whether it is going to happen?

Lots of words are written in Washington, and the world moves only part-way towards the goals that are set. I would be nervous if this were somebody else's program with us downstream from it. I would want to see them adopt some of the proposals I have made here to enhance my confidence that in 1994 we could be celebrating rather than wringing our hands and looking towards the skies.

Finally, on the subsidy, I could not agree more about the importance of research and development; we certainly ought not to stand in the way of it. I do not think this program does in any way stand in the way of research and development. The people who can best judge R and D are the people who are going to use the end product; that is, the sources themselves are the ones in the best position to decide where to do the research. What is going to have a payoff and what is not? I am certainly not in a position to assess that all, and I am not sure the Ministry of the Environment is ever going to be in as good a position as the sources in judging the technology or the feasibility of any research program.

That is why I think it is important to leave the primary decisions in the hands of the parties and not to skew those decisions by simply offering lots of money. We have seen some great mismanagement of research and development in a tax subsidy program at the federal level that arose out of an inability to monitor what was going on with the money. I am not suggesting there is a potential for that kind of activity here, but there is always the danger when you put money on the table that it is going to be used for a variety of purposes, only some of which are the ones you want, and that it

will not always be spent in the most efficient way because it is not their money. This is free money. I am urging caution.

I suggested the matching idea to make sure a source that asks for money is prepared to put its money on the line in pursuing that particular direction, but I take your point about sources saying, as sources often do: "We are going to close down. We cannot do it. We cannot afford it. Tell our workers where they are going to find their next jobs." That is a common response to a tough regulation; government always has trouble responding to that because it is hard to know when they are bluffing. I am not saying the money should not be there for use in tough cases; I am just urging caution in handing it out.

Mr. Partington: I have a couple of questions. I was going to ask something about your emission trade idea. I would like your comments. It seems to me it is not really a good public policy to allow a corporation or an entity to receive payment for not using something. For example, we have heard that Falconbridge is already below its 1994 emissions and that perhaps Algoma will not meet it because of its activity. On your submission, as part of their profit-making business, we give them the sale of something they do not need in the first place. It is a sort of marketing board effect for sulphur dioxide emissions. I just cannot see society accepting that type of operation. Would you comment on that, please?

Dr. Dewees: I do not like the marketing board analogy, but I cannot argue that it is not appropriate in that marketing boards represent limits set on something, and often the quotas become marketable and they are bought and sold among producers. Here, in a sense, I am proposing that we do the same thing. The government has already set limits. I am just suggesting that those limits be tradable.

I would not suggest that did I not think some gain could be had from it, because I understand the point you are making: People will say, "If they can already meet it, why do we allow trading?" My motives for suggesting it are twofold. One, it introduces this element of flexibility that Ontario Hydro has argued it needs. If we are going to give flexibility to Hydro, I would rather see it in a way that does not alter the ultimate environmental outcome.

It does two things if we give it flexibility by saying: "You want to emit more? Go to Algoma or to Falconbridge and see if you can buy some discharge rights from them." One, it provides the possibility for flexibility for Hydro. Two, it gives Algoma and Falconbridge an incentive to reduce their emissions even when they are already below the limit. Right now, once they get down to or below the 1994 regulated limit, as it has been suggested, that they are there right now, there is no reason for them to spend a penny on anything connected with pollution control.

If on the other hand, they anticipate Hydro coming in, cap in hand or, more accurately, chequebook in hand, saying, "We are stuck; we will pay \$1,000 a tonne for some of your discharge rights for 1989," that provides a substantial financial incentive for Algoma and Falconbridge to say: "There are some other things we could do here that would cost us a lot less than Hydro is offering, say \$100, \$200, maybe \$500 a tonne. Let us do 50 or 5,000 tonnes at this old price and sell it to Hydro." We the people, the public, get cleaner air because Hydro is not getting an excess without our receiving something back for it, and Algoma is getting some desperately needed cash.

Mr. Partington: I see it in that case, but I was thinking of the case where you have just got, if you like, dormant limits lying around where

nothing has to be done; they are just there. Perhaps an approach would be that instead of trading those emissions--for example, if there were some discretion on government to allow Hydro to go beyond limits, maybe that excess could be taken into account as an upper limit because it is already part of the ceiling. Maybe that is a variation of what you have suggested.

Dr. Dewees: I hear what you are saying. I am an economist and so I like markets, and if Hydro negotiates directly with the other source, that will likely maximize the amount of reduction that is achieved.

Let me give an example. This trading of emission rights may sound radical, but there is a precedent in the United States. If you want, I can take a minute to explain what it is. Under the US emission regulations, under the Clean Air Act, if an area is particularly dirty, no new source can be built. If it was a nonattainment area, you could not have any new sources in that area. As it turned out, there were lots of nonattainment areas. Many major metropolitan areas were nonattainment areas, and the governments in those areas discovered that new sources that polluted even a little could not come in. If you were going to discharge any of the nonattainment pollutants, the door was barred. As you can well imagine, that created terrible political problems in these major metropolitan areas; so there was a struggle to find some way to maintain the letter of the law and yet allow some flexibility. Trading of emission rights was what emerged. There they are called offsets.

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A new source, say General Motors, wants to build a new factory in southern California, and southern California has too much hydrocarbon emissions. General Motors gets together with an oil refinery and pays that oil refinery to reduce its hydrocarbon emissions by 100 or something. General Motors is going to discharge 50 from its new source. The two of them then go cap in hand to the Environmental Protection Agency and say: "We want to get married. We want to have 100 tons' reduction by the refinery and 50 tons of new emissions by General Motors. That is an improvement in air quality for southern California, and it helps us build a new plant." The EPA ultimately started saying yes to those things. That is an example where this trading actually takes place, and studies have been done and have documented the trades that have occurred.

The interesting thing about that is the refinery that essentially sold some emissions to General Motors had been telling EPA all along: "This is the best we can do. You are regulating us and regulating us, and we cannot do any better. This is our cleanest. This is as far as we can go." EPA said: "Yes, that is right. This is as clean as it gets in this particular refinery." Along comes General Motors with some cash, and suddenly there is an emission reduction of 100 tons per day that EPA could not get out of them.

I am convinced that money talks and that a bidder may achieve some reductions which the Ministry of the Environment or the Legislature may not be able to achieve because why would Falconbridge or Algoma admit they could reduce or did not need their emissions if there is nothing in it for them? If there is money in it, they are more likely to find it.

Mr. Partington: I wonder if I can have one more question on enforcement. I know it is a pretty lengthy area, but when I read the banking and the forward averaging provisions and read the description of this Countdown Acid Rain, it seems to me if you took out banking and took out forward averaging, there is no difference. If Hydro got into difficulties, it

could still go to government and say: "We are going to exceed it. We cannot help it. Therefore, you have to permit it."

Dr. Dewees: That is what happens now.

Mr. Partington: How does Countdown Acid Rain make that situation happen any less or make it any tougher? Can Hydro not just do the same thing? As I read this, it still has to go to the government; it still has to get approval and prove its case. Are these words just in there to look better, or do they add substantial strength to the program?

Dr. Dewees: I cannot answer that for the ministry. It may be that they wanted to formalize what people who are familiar with this realize is going to happen anyway. I really do not know what the added gain is, which is one reason I am happy to see it taken out. But I think we have to remember the possible need for flexibility and anticipate that because, as you suggest, it can happen to anybody any time. That is why I think putting something in place and creating low emission rights as an alternative heads off the appeal to the government that we simply raise the limit. If we create low emission rights in the first instance, they at least go out and negotiate with their colleagues.

Mr. McLean: The last two paragraphs on page 6 pretty well explain the situation as it is with regard to fines. It cannot be done.

Mr. Pouliot: Professor Dewees, I too have enjoyed your presentation in terms of content and information. It is only natural that one would elect to focus on the major pollutant in terms of Ontario Hydro and Inco, SO₂.

Maybe you can help me. I have a bit of difficulty. The mandate of Ontario Hydro, we are told, is essentially to produce electricity at cost. We are quite aware--and we do not risk offending anyone--that mostly in Ontario, Ontario Hydro has a cartel, a monopoly; it is the only kid on the block, let us say, the major supplier of electricity.

Maybe you can favour us with your opinion. Given the mandate and given the fines should they fail to be deterred in terms of emissions, they simply pass them along to the consumer as opposed to Inco, for instance, which pays Ontario Hydro--and it is an irony--anywhere from \$48 million to \$50 million a year. They too pollute the environment with SO₂, and yet the price of nickel--and I am not the one saying this; figures from Inco will attest--just to match the Ontario Hydro increase, would have to go up every year by some eight to 10 cents a pound.

Again, the same figures will attest that it has been going downwards, so they do not have the same ability as Ontario Hydro has to meet the fines that would be pending. With respect, if it is going to mean something, if it is going to achieve any clout, because we do have the technology to do better, I would prefer to see every dollar of fine used in research and used to address that specific problem and that the endeavour be monitored closely.

I share your views that the banking program--and I will be generous--is something that is very imaginative and to some may appear somewhat innovative, but I think it is an invitation to sin that if you do less one year you may do more the next. When it comes to forward averaging, we are aware of tax loopholes at the federal level, and remember the analogy is on the tax system. I really do not see the seriousness; in fact, it is somewhat farcical.

Would you favour a program whereby the fines that are already in place under the new legislation will generate quite a bit of revenue should people

fail to meet the requirements and whereby those fines would be turned back into the system and monitored closely to enhance the environment?

Dr. Dewees: Again, I understand the logic of what you are saying. I guess I have two problems with that. Number one, because of the problems of securing a conviction, we are not sure what fines, if any, will be collected under the traditional enforcement methods. Even though the ministry has now greatly increased its penalties, we have yet to see--and we are not going to see for a few years--how those work their way through the court system. Are courts really going to levy \$1-million fines and in what sorts of cases? Will they convict in the sort of situation we may be faced with here. We cannot be sure, from the point of view of a fine for a criminal prosecution, that we are going to see a large amount of revenue.

If on the other hand we are talking about the notion of a charge for exceeding the limit, which is not a fine although it is still money, that raises my second concern. If you collect this money, you say you want to turn it back to the enterprise, but how do you turn it back? If you give it right back to the firm you took it from, then there is no penalty. Then you have lost the incentive effect. If you want to put it into the general pot out of which the subsidies contemplated in this program would be paid--and which I have indicated I am not keen on, but I have not said to eliminate them--that will help fund the subsidy aspect of the program that is contemplated here. That strikes me as perfectly reasonable, but I guess I do not see a need to set up any separate channel for those funds other than either putting them into general revenues or putting them into the pot out of which the subsidy is paid.

Mr. Pouliot: The focus or the subject matter being addressed as a deterrent is to lessen the amount of emissions. That has to come at all costs. That is what we are saying?

Dr. Dewees: Yes.

Mr. Pouliot: Given that, I would not be comfortable in assuming that as long as I can afford to pay the fine, I have less ability to compete in the marketplace because I have less money, but the real subject matter gets bypassed because I am not addressing it. I am paying more because I fail to meet the standards, yet nothing is being done to address the standards.

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What are your views regarding the enforcement: that you will pay if you exceed or surpass the standards and then, with that money or a mechanism, you must be forced to address those standards to lessen the emissions?

Dr. Dewees: I am convinced that facing large financial penalties for failing to meet the standards would provide a powerful incentive for the firms to meet them. It is true that the firm that has paid out a large penalty is financially less able to pay for its own pollution control, but the environment is essentially a resource that industry is using. It pays for its capital equipment, labour, electricity and other inputs. We are now proposing, not that it pay for using the environment, but only for excess use of the environment. That seems to me a very modest step down the road towards what has been called the polluter-pays principle, that those who use the environment should pay for it.

Remember, we are talking about the resource industries of Ontario here.

These have traditionally been the backbone of the province. If the resource industries of this province need handouts from the government, where is the economy going? The money comes from the rest of us. I think we have to ask the question, who is supporting us all if even the resource industries cannot pay for their inputs and their use of the environment?

Mr. Chairman: Professor Dewees, I want to thank you for taking the time to appear before the committee this morning. Your presentation has been very informative.

Our second deputant this morning is Professor John Shaw. I believe Professor Shaw is with us. Could I ask him to come forward and take the chair formerly occupied by Professor Dewees? Welcome, Professor Shaw. I will give you a couple of moments to prepare yourself. I presume you have some material there for a handout.

Dr. Shaw: It should be prepared. Tannis Manikel is making some photocopies.

Mr. Chairman: Because of the time constraints we have, I think it will be appropriate if you make your presentation. If members of the committee have any questions, they should hold them, save and except for any questions of clarification, until the professor is finished. Then we can get into the question period.

DR. JOHN M. SHAW

Dr. Shaw: First of all, I am very pleased to be here. What I would like to do is merely to read the letter I addressed to the committee, because most of you do not have copies. Then I will be pleased to entertain questions.

I am here on relatively short notice, as some of you may be aware. I received a rather large packet of documentation on Friday afternoon last week and was away until yesterday afternoon, so my presentation will be brief and I am sure I will fit within the time constraints set out by the committee.

In any event, I am here on request from the committee. As the intervening time between the request for my presence and my appearance is quite short, I would like to restrict my comments to flue gas desulphurization and a couple of very brief comments on the philosophy behind the regulations pertaining to acid gas emissions.

The technical and economic feasibility of SO₂ removal processes depends on the type and quantity of effluent gas to be treated. In Ontario, there are two distinct effluent gas treatment problems. Coal-fired or fuel-oil-fired electrical power plants emit flue gases with low concentrations of SO₂, typically less than 0.2 per cent by volume, but at tremendous flow rates, whereas flue gases from pyrometallurgical processes typically contain much greater concentrations of SO₂ at relatively low flow rates.

Concentrated effluent streams can be fed directly to secondary processes where saleable products or potentially saleable products such as liquid SO₂, sulphuric acid or possibly elemental sulphur can be produced. The SO₂ contained in dilute process streams must be removed chemically from these streams prior to secondary processing or disposal. Flue gas desulphurization techniques can have both a high operating and capital cost, and as indicated by the submissions from Ontario Hydro, Falconbridge, Inco and Algoma Steel, other alternatives, particularly sulphur elimination, are preferred from an industrial viewpoint.

As far as individual critiques are concerned, Ontario Hydro is currently relying on increased nuclear power generation as the primary means for reducing acid rain emissions from coal-powered generating stations. However, the company anticipates a renewed requirement for coal-fired power generation after 1994 and has begun to consider alternatives for reducing acid gas emissions.

Unless power requirements from coal-fired generating stations are small, it is unlikely that coal cleaning alone will be sufficient. Only a fraction of the pyritic sulphur can be removed by cleaning. Organic sulphur and a fraction of the pyritic sulphur will still report to the flue gas. Modest reductions in acid gas emissions can be anticipated from this method.

Substitution of low-sulphur coals will reduce emission levels, but at 1984 levels of usage a coal with a sulphur content greater than 0.7 weight per cent, half the current level, would produce SO₂ emissions in excess of the 1994 limits.

All the flue gas desulphurization processes considered by Ontario Hydro are technologically feasible. Three of the proposed process routes have been demonstrated on an industrial scale and extensive operating experience is available worldwide for wet limestone scrubbing, the dual alkali process and lime spray drying processes. Ninety per cent removal efficiencies for SO₂ can be achieved with these and other process routes. Thus, the proposed emission limits can be met with existing flue gas desulphurization technology.

The capital and operating costs for flue gas desulphurization processes are appreciable. The lime spray drying process has a projected operating cost between 50 per cent and 70 per cent of the two other processes cited above, as it is not necessary to recirculate a liquid phase. However, this process has not been proven with high-sulphur coals. Prospects for the success of furnace limestone injection processes must await further developments. Large solid disposal sites will be required for all four processes and it will be necessary to reduce the power ratings of the boilers on which these processes are installed by two per cent to four per cent, depending on the process.

With respect to Inco and Falconbridge, these two companies share a certain range of problems. Both Inco and Falconbridge must make significant process and operation modifications in order to meet the requirements of the Countdown Acid Rain program. Research is being undertaken to increase pyrrhotite rejection and the possibility of recovering additional SO₂ from various process off-gases is being addressed. Inco, for example, plans to capture converter off-gases and convert the SO₂ to sulphuric acid as part of its acid gas emission control program.

As converters operate in a semicontinuous fashion, large fluctuations in off-gas composition are anticipated. These fluctuations will effect the operability of an acid plant. If problems of this type can be resolved and process streams with sufficiently high SO₂ concentrations can be identified and captured, proven technology can be employed to produce sulphuric acid.

I did not feel it was necessary to address the Algoma Steel situation, as it plans to downgrade the throughput of its plants to well below the levels that would be acceptable for the 1994 regulations.

lead to a reduction in acid gas emissions. However, in the longer term, rather than setting absolute levels for acid gas emissions which ignore fluctuations in production rates, it may be appropriate to tie emission rates to production or use levels--for example, so many kilograms of SO₂ per tonne of coal burned or nickel produced--and to impose ceilings on the size of individual sources, which is essentially the intent of the current set of regulations. Standards for different industries would vary, depending on the prevailing level of applicable technology. Such an approach has been adopted in other jurisdictions.

I would be pleased to entertain questions concerning these matters.

Mrs. Grier: Looking at your submission about Ontario Hydro, do I take it from your last paragraph that if this process were applied to the lower-sulphur coal, there would be an even better rate of reduction?

Dr. Shaw: So far, limestone or lime spray drying has been applied only to relatively low-sulphur coals. By that, it is implied that the coal has a sulphur content something in the order of one per cent or perhaps a little greater. High-sulphur coals would have two or three per cent sulphur. The coal Ontario Hydro is currently using has about 1.5 per cent sulphur.

Mrs. Grier: As I understand Hydro's approach, it is that you substitute western Canadian coal for American coal. That is one technique for reducing emissions and lime spray drying is another. I am wondering about a combination of the two and whether that would result in a much greater reduction than either of the two separately.

Dr. Shaw: As far as substituting coals from other sources is concerned, you could probably reduce the emissions to a certain extent. As I have indicated, at levels of usage in 1984, you would need to have a 0.7 weight percentage sulphur level as a maximum to meet the 1994 SO₂ emission requirements. It is quite likely that flue gas desulphurization techniques such as spray drying will be required to meet that end.

Certainly by applying lime spray drying or one of the other processes to a fairly low-sulphur coal, you should be able to reduce the emissions quite substantially from current levels. I have indicated that routinely 90 per cent removal rates for sulphur can be achieved with these processes and are achieved in industrial applications elsewhere. The restrictions on emissions as currently constituted suggest a reduction from the 1984 base to 20 or 30 per cent of the 1984 level or somewhere in that range. That could easily be met by one of the desulphurization processes.

Mrs. Grier: They could achieve that level with either or with both?

Dr. Shaw: They could do both.

Mrs. Grier: They do not necessarily need both? Is that what you are saying?

Dr. Shaw: You could put in both.

Mrs. Grier: There is no advantage to putting in both?

Dr. Shaw: As the act is currently written, unless the usage rates of coal are quite low, it is unlikely that Ontario Hydro will be able to achieve the 1994 limits from using lower-sulphur coals. Again, I am not aware of what

its usage rates are and, as the act is currently written, there is just a ceiling on the total sulphur emission and not the emission per amount of coal used, let us say.

Mrs. Grier: I apologize; I guess I am not very familiar with your area of expertise, this whole question of flue gas emissions. Do you come to your conclusions from independent knowledge of what Inco or Falconbridge are doing or from your review of the literature?

Dr. Shaw: From some of both. I have been involved in coal utilization technology since 1981. My PhD work related to coal liquefaction, which is one method of eliminating sulphur from coal to produce oils which can subsequently be used for a variety of purposes. I have also been quite interested in multiphase reactor design. All the flue gas desulphurization processes are, in a sense, multiphase reactors. You have solids, gases and, in many cases, liquids present and one has to be concerned about mass transfer from one phase to another so that reactions can occur and that sort of thing. I am fairly familiar with the details of these types of processes. My knowledge is based on an independent review of literature, other than what Ontario Hydro and various other companies have submitted, as well as some research background.

Mrs. Grier: We visited Sudbury last week and I was exposed for the first time to what some of these things are all about, and one of the comments made by somebody who was showing us around was that the various types of gases do not mix in the flue. In the context of the accuracy of monitoring, there might well be times, therefore, when there would be a spurt of pure SO₂ as opposed to a mixture of flue gases coming out. I know nothing of chemistry and I may have misinterpreted what I was told, but could you throw any light on the relevance of that kind of comment?

Dr. Shaw: It is conceivable. It depends on how many sources are being fed to the stack. Many of the processes at Inco and Falconbridge are intermittent in nature. For example, the converters may be generating a stream of SO₂-rich gas for only 20-minute or half-hour periods per hour or perhaps even in less time than that; so one could quite easily have fairly large fluctuations in the levels of SO₂ emissions from the stacks.

The other aspect would be the roasters. If you inject pure oxygen into a roaster, you can have SO₂ levels in the gas leaving that roaster at about 70 or 80 per cent by volume. Depending on the way these gases are mixed, if they are mixed before entry to the stack, you could conceivably have rather large excursions in the composition of the effluent gas.

Mrs. Grier: What kind of a monitoring system does that require you to design? What I am learning from this is the suspicion that while the monitoring may show there is no problem from a certain stack, it is possible there would be periods, be they 20 minutes or half an hour, when there would be very concentrated emissions from that stack.

Dr. Shaw: The only way to work that out would be with some kind of on-line SO₂ monitor. I would assume they already have those present. It is a question of sampling rates to make sure the sampling rates are sufficiently close together so that you can monitor fluctuations. It may also be important to place the monitors or series of monitors very carefully within the stack system to ensure that a representative sample is obtained for analysis.

Mrs. Grier: I see. Some of the submissions we heard have stressed

the need for independent monitoring rather than allowing the industries to do their own monitoring and sampling, and what you are saying would somehow substantiate that concern. They may not be placed in the most advantageous positions to capture all occurrences.

Dr. Shaw: It is conceivable; it depends on where they are placed. I would say there should be some level of mixing somewhere halfway up the stack or beyond, as long as you are well away from all the various inlets. If a sample source is from a region which is very close to a great number of inlets, let us say, near a plenum of some kind, then the sampling device may read only values which are applicable to one of the various sources that are entering the stack. I presume that by regulation they must have the sample ports on more representative locations, such as well up the stack.

Mrs. Grier: Thank you.

Mr. Wiseman: You mentioned in about the fourth paragraph under Hydro that we could achieve about 90 per cent removal. We heard how much more expensive it was to use the low-cost coal from the west, not only for the coal but converting and one thing and another and it does not burn as hot. You do not get as many heat units out of a tonne of it as you do out of the American coal they are presently purchasing. You say you can achieve 90 per cent. Could you go into it a little further and try to look at costs to achieve that goal? What would be the most reasonable way to go so that we, as taxpayers for Ontario Hydro--because it is a Hydro cost--are not paying more than we should?

Hydro showed us one it is doing where it is putting in about 20 per cent lime into the mix with the coal. Now it is starting this summer on another pilot test. It is probably not far enough ahead to determine what the costs are. You said you have not had firsthand information on what it is doing, but you have read a lot of books that have been published on that. Is it fair to ask what your assumption would be before Hydro has even tested these?

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Dr. Shaw: It is very difficult to say which would be the most economically advantageous. There are so many tradeoffs, no matter which type of process you select. For example, the technologies associated with wet limestone scrubbing and the dual alkali process are more developed, particularly the wet limestone scrubbing. There are many units of these types installed worldwide; so in some sense one can say that it is economically justifiable or feasible. However, there are many problems associated with those, including a need for very large landfill sites. There is a lot of liquid recirculation, which again requires a lot of processing equipment and fairly high operating costs.

I think the process Ontario Hydro is pursuing, limestone spray drying, has the potential for being considerably less expensive than that. It is merely a solids handling problem rather than a liquids and solids handling problem. There will be landfill site requirements for all these processes.

Limestone injection into the burners also has some prospects for being less expensive than the first two processes I have mentioned, because again it does not involve as much process equipment. In fact, it appears to be much simpler even than the limestone spray drying technique, as there is a certain amount of equipment associated with that. Given the lead time Ontario Hydro has and its reduced use of coal, perhaps the reasonable approach to take is to examine potentially less expensive alternatives.

The first two processes are quite expensive. They are used in other jurisdictions, but they are quite expensive. To give you some indication of cost, just to get a scale, wet limestone scrubbing and the dual alkali process may be somewhere in the range of US\$25 to US\$30 per ton of coal burned, depending very much on the size of the industrial boiler, the size of the utility and the amount of sulphur that has to be removed. Limestone spray drying is somewhere between 50 per cent and 70 per cent of that. I cannot give you a firm figure, but it is considerably less. The price of coal is in the range of US\$50 or US\$60 per ton, depending on what the source is, so it is a very significant cost we are dealing with here. I can appreciate Ontario Hydro's desire to reduce the cost by exploring alternative methods.

Mr. Wiseman: Perhaps I was wrong the other day when I just assumed this was a first or they were getting into experimenting with spraying and mixing the lime. Maybe I misunderstood you, but I thought you said this had been done in other jurisdictions. Was it the committee's understanding that this was something new and exciting? Can you tell us where else it is being done so that we might ask about it?

Dr. Shaw: Certainly. The lime spray drying process has been employed in electricity generating stations in the US. I have a number of possible sources. I could list them for you if you like. However, it has not been employed with high-sulphur coal to any great extent. There is some question as to whether it will work to remove the somewhat higher-sulphur emissions. There are limits to the rates of the reactions that are conducted in that particular process. For example, if you had a two weight per cent sulphur coal, you may only be able to remove half, whereas if you had a one weight per cent sulphur coal, you may be able to remove 90 per cent. This sort of question is unresolved.

Mr. Wiseman: In the United States, would they not be getting their coal from basically the same source as we do? Do they have a lot of coal mines down there?

Mrs. Grier: They get western Canadian coal.

Dr. Shaw: Coal from the western coal provinces and the United States also.

Mr. Wiseman: Would they be newer generating plants?

Dr. Shaw: Yes, these are the new generating plants.

Mr. Wiseman: They do not have to do all the conversion we would have to do here.

Dr. Shaw: Some of the installations are retrofits and some of them are new installations, but for the most part they are relatively new utility installations.

As far as the lime injection process goes, it was first tried out some time in the early 1960s, I believe, but not on such large-scale systems. The efficiencies were quite low and that sort of thing. There is a fair bit of development work that has gone on in between, but the process itself and the concept of using the process has been around for some time.

Mr. Wiseman: What is the bottom line? What did they get down to in the western United States in emissions by doing this?

Dr. Shaw: By doing the various processes, routinely 90 per cent removal efficiencies are achieved.

Mr. Wiseman: What per cent did they end up with? We are about 1.5 per cent, are we not?

Dr. Shaw: In the gas coming out?

Mr. Wiseman: In the amount going up the stack.

Dr. Shaw: No, it should be about 0.1 per cent to 0.3 per cent right now, if the coals are in the range of one weight per cent to one and a half weight per cent sulphur.

Mr. Wiseman: What would they achieve, half of that?

Dr. Shaw: They would be down to levels of about 200 parts per million, which would be a factor of five to 10 lower in the stack gas emissions.

Mr. Wiseman: Five per cent to 10 per cent of the 1.1 per cent?

Dr. Shaw: About 10 per cent of the sulphur in the coal would be ejected up the stack, but the concentration that we are emitting from our generating stations is around 0.1 volume per cent or 0.2 volume per cent SO₂ in the stack gases being emitted. The concentrations in the stack gases from some of these other processes are in the range of 0.02 per cent by volume, which is about a factor of five or 10 lower.

Mrs. Grier: I am totally lost. Can you put that in language that I can understand?

Dr. Shaw: I am sorry.

Mrs. Grier: How much of the flue gas is SO₂ and how much of that SO₂ has been removed in stations in the US?

Dr. Shaw: Sorry; I guess we are confusing two issues. The 90 per cent removal efficiency pertains to--you have so much coal coming into the generating station that has a certain sulphur content; that content may be one per cent or 1.5 per cent. Of that, 90 per cent is captured as part of--

Mr. Epp: Ninety per cent of the one per cent?

Dr. Shaw: Ninety per cent of the one per cent is captured and then sent to landfill, or there are some processes where SO₂ is regenerated in a concentrated stream and other products are produced. The 90 per cent removal efficiencies are routinely achieved.

Mr. G. I. Miller: Is that usable material? Could that be utilized?

Dr. Shaw: Which?

Mr. G. I. Miller: The sulphur. Could that be utilized again rather than putting it in landfill sites?

Dr. Shaw: That depends on the processes you select. Some of the processes that exist, the ones that Ontario Hydro is considering, are

essentially throwaway processes where landfill will be required. There are others where the SO_2 is captured in a medium, usually as a sulphate or a calcium sulphate salt. There are various types of processes. Then the absorbent material which absorbs the SO_2 from the stack gases is regenerated, and in the process SO_2 is regenerated in a very concentrated stream. Instead of having a stream that is 0.1 per cent SO_2 by volume, you have a stream that may be 90 per cent or 80 per cent SO_2 by volume.

This stream can be reprocessed. There are technologies and processes available for reprocessing the SO_2 . In modified house plants, you can produce elemental sulphur which can perhaps be sold or again you may have to go to a landfill site. It depends very much on the markets. One could also produce sulphuric acid.

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Mr. G. I. Miller: What is the potential use for it?

Dr. Shaw: It is pretty much the same source as for sulphuric acid, which is another process route. You could generate sulphuric acid as well as dyes, fertilizers, industrial reagents, that sort of thing. The markets for these are quite saturated, unfortunately.

Mr. G. I. Miller: Could they be used in the agricultural industry?

Dr. Shaw: Yes.

Mr. Chairman: I would like to give the floor back to Mr. Wiseman.

Mr. Wiseman: We heard that the efficiency of western coal in heat units was 75 per cent of the coal we are burning here; your calculations would go up because apparently you have to burn a tonne and a quarter to get out the same heat. We heard too, if I am right, that the sulphur in it helps to burn it; once they get it started, they do not have to add any other fuels.

In the United States where they are using this, I would take it--because they are probably not any further ahead than Hydro here, if they are up to date--they would have to burn some other fuel along with it to keep western coal going. When you take all those elements into consideration, where are they, as Mrs. Grier has asked you? That is what I was trying to get at. With regard to the bottom line, where are we?

Dr. Shaw: The energy content of the coal depends very much on the history the coal has undergone. There can be rather wide variations. The high volatile bituminous coals which are frequently used in power plants have a fairly high energy content; they are energy dense. Some of the western Canadian coals, particularly some of the subbituminous coals etc., have a lower energy content as a consequence of their history.

Mrs. Marland: Is that because they are wetter, have higher moisture?

Dr. Shaw: When you discuss the energy content of a coal, you usually select it on a dry basis so that you can compare contents, but the temperature you could realize and the amount of usable energy would be less if the coal were wet. That is quite true. As far as requiring co-burning of other fuels with the coal is concerned, I am not aware that is a requirement.

Mr. Wiseman: We understood that with the American coal--blowing it

in and the fine dust it goes in--once they get it going, the sulphur in it, if I am right, keeps it going and it generates heat up to 1,000 degrees. Then we were told that about 75 per cent of the heat was all you got out of the western coal and that some other method of keeping it going would have to be used, for the same reason Margaret has mentioned. They mentioned it was very wet and one thing and another. To us, to me particularly, coming from a rural area, it is like burning cedar or burning hard wood, two different fuels.

Mrs. Grier: Both wood.

Mr. Wiseman: In this case, both coal.

Dr. Shaw: From that point of view, sulphur is an excellent fuel; there is no question. It has a very high energy density. As far as achieving comparable temperatures is concerned, which I assume is the objective of Ontario Hydro, if that is perceived as a problem, one can adjust the composition of the combustion gases, which would allow you some flexibility in terms of the upper temperature of the furnace.

This is not my principal area of expertise, but with oxygen enrichment, for example, instead of injecting very high, straight air, which is 80 per cent nitrogen and does not contribute to the energy density of the system and, in fact, prevents it from getting to as high a temperature as it otherwise might, if you substitute oxygen-enriched air, which has a 30 per cent instead of a 20 per cent oxygen content, you could perhaps compensate for the lower energy density of the fuel and get the temperature up in that fashion. In the design of industrial boilers, there are always compromises of various types.

My evaluation of the economics is simply from this point of view. If I were to burn the same amount of coal with essentially the same energy density--there are always going to be variations--the costs of removal, as indicated, are merely the costs involved with installing the abatement equipment and operating it rather than the consequences for the boiler itself, which do exist. I indicated that they can expect power reductions. The level of power reduction will depend on what is going on.

In some respects, Ontario Hydro may be better off using the high-sulphur coals with a flue-gas desulphurization technique than using coal from western Canada. An additional related factor would be the costs of transporting western Canadian coals all the way to Ontario. There are all kinds of economic conditions.

Mr. Wiseman: I will not go on much longer. When you tell people like us this morning that you go from 1.1 down to whatever fraction it was, we should compare apples to apples and not apples to oranges, because of the difference in the cost. You said a minute ago that you took a ton of coal and compared it to another ton of coal, but as a business person and working out of plants, I think you have to take into account how much does it take to achieve the same number of heat units and those sort of things. I am not a chemist either, just a farmer politician, but when you add oil or something else--gas I guess is the cleanest there is--to make that burn, what other emissions are you putting up that could be dangerous?

Dr. Shaw: I think we are getting off on a tangent here. As far as reducing the sulphur emissions by 90 per cent is concerned, that can be achieved with high-sulphur coal, depending on which process you use. We could maintain the same coal sources we currently have and reduce the emissions by 90 per cent with the technology that exists without having to change to coal from western Canada.

The discussion of western Canadian coals as a potential source was brought up by Mrs. Grier, who indicated how much further a reduction could be realized if we used a coal that already had a lower sulphur content. Certainly if a coal has a lower sulphur content, with the technologies that exist for removing sulphur, one could achieve somewhat lower levels of sulphur emission, but as you point out, there are going to be costs. If you change the coal source and change a number of variables at once, it makes it almost impossible to compare economic costs and other factors.

The point I wish to make is simply that the 90 per cent removal efficiencies can be achieved with the coals currently used.

Mr. Wiseman: I will quit there, but I understood, and maybe I am wrong, there was no place you could go and buy a system off the shelf, that a lot of this was all research and development. What you said a minute ago led me to believe it is in place in other places and you must be able to go to the store and buy it. Maybe I am wrong in that, but I understood that from someone who came here that you just cannot go to a store and buy the system you need.

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Dr. Shaw: Babcock and Wilcox manufactures one or more of these processes. Research-Cottrell manufactures some versions of these. There is at least one Japanese company that manufactures one or more of the potential processes. Each site is slightly different in the sense that you must design for the capacity that is there, but the basic technology exists and there are commercial developers. The Tennessee Valley Authority is another. That is not to say there are not ongoing development and research topics related to these various processes, but these processes are commercially available, or at least some number of them in some combinations are commercially available.

Mrs. Marland: Can I have a supplementary?

Mr. Wiseman: Yes, fine.

Mrs. Marland: Am I supplementary or legal?

Mr. Chairman: Shall I rule on it after I hear it or would that mean that you have already asked it anyway?

Mrs. Marland: I did not know where I was on the speaking list.

It is amazing for us sitting here to hear what you just finished saying, because of the time we spent last week looking at processes for solving the problem and hearing from people about the tremendous amount of work that is going into developing those processes and, I would hasten to add, a tremendous amount of money that research and development requires.

You have described yourself as someone who has been studying coal utilization for six years. Am I hearing you correctly? You say there is Babcock and Wilcox, and you mentioned one or two in the US. It sounds as though in answer to my colleague Mr. Wiseman's point, there are processes available off the shelf.

Dr. Shaw: At a cost. As I have indicated, these processes are expensive.

Mrs. Marland: If they are expensive, then they are not the answer

for these industries that are trying to provide a utility or a product and stay in business. Would that be a fair answer?

Dr. Shaw: There are many installations of a number of these processes already in operation and have been for some time, particularly the wet limestone scrubbing. If my memory serves me correctly, there are probably between 20 and 30 installations of various types that are in use.

Mrs. Marland: Of the wet one?

Dr. Shaw: Of the wet limestone scrubbing. There are a number of industrial boilers in Japan that are using varieties of dual alkali and limestone scrubbing. As well, there is a sodium injection process, which is not really applicable to this problem, but there are hundreds of those around.

There are technologies that exist. These processes do exist, but there is so much research and development going on that the economics of these processes will change dramatically in the next 10 years. I expect the costs will come down considerably. One of the driving forces is that the costs are relatively high. Within a reasonable time frame, developments are anticipated that will lead to a significant reduction in those costs. In that paragraph I wish to indicate that these processes are technologically feasible. I did not say they would be cheap or cost-effective.

Mrs. Marland: In the fourth paragraph of the second page of your submission, you say, "Ninety per cent removal efficiencies for SO_2 can be achieved with these and other process routes." You also say, "Thus, the proposed emission limits can be met with existing FGD technology." I underlined the word "can." You are not making the statement "will be." You are saying they "can be." I guess you are saying that because of the existing cost factor.

What I find interesting in reading this is that I heard last week that with the systems that are being tested currently at the Lakeview plant, for example, they seem to be quite excited at 45 to 55 per cent success in terms of removal. We were told of one that was being tested, the one that works in combination with SO_x , so I think it is the reduction system. In hearing about that, we learned that it is just one of many that are being tested and, of course, when they are being tested, they are being tested on one or one and a half kilowatts, and we need something that deals with 300 or 400 kilowatts.

We all readily admit to being laypersons. Mind you, I should say that when the members of this committee admit they are laypersons, sometimes that is quite an advantage because they can separate the wood from the trees. I am amazed by the depth of understanding of my colleagues on this committee because it is interesting that when you ask questions in a simplistic way and you get simplistic answers, as we did on the reduction emissions technology system as well, you realize that so much of it is at a very early premature stage of experimentation.

I mean something that may work for one kilowatt, when it is upgraded and increased to deal with the capacity we are talking about, may not be feasible at all. I am just wondering about these three that you mention. You said there are 30 installations of wet limestone scrubbing that you are familiar with. Are they working on a cost-effective basis in those 30 installations, or are those just experimental research and development installations the same as the two installations we saw at the back end of Lakeview last week?

Dr. Shaw: As far as limestone systems under construction are concerned, I brought this book along with me because it has some very interesting tables. It is from 1979 and 1980. There were at that time quite a number of very large-scale limestone systems under construction in the United States, ranging from 625- to 180-megawatt capacities. Most of those were new with the exception of one which is a retrofit, which was at a 425-megawatt capacity. There are quite a number of those around.

This is fairly old literature. I have much more extensive files in my office, but I have only so much room in my briefcase, and this seemed to be the most representative one.

Mrs. Marland: So there are examples of these kinds of systems on the kind of volume and capacity that we are looking at?

Dr. Shaw: For lime or limestone injection, there are at least 28 utility plants essentially in operation, and this is in 1979 and 1980.

Mr. Chairman: Mrs. Marland, I wonder if we might get back to the speaking order now.

Mrs. Marland: That is fine.

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Mr. D. R. Cooke: Dr. Shaw, as I listen to your presentation, I am reminded of a grade 12 guidance counsellor who indicated to me that chemistry was not and was not likely ever to become my area of expertise.

I wonder if I can turn to the last page. I take it you are generally of the opinion that Countdown Acid Rain is on the right track, but you are indicating the regulations, as they are presently written, ignore fluctuations in production rates and that there might be room for some change there.

The witness before you approached these matters from an economic and legal professor's point of view. He talked about tradable emission rights. I do not know whether you heard much of his presentation, but he talked about granting or selling certain rights to industry and then allowing them to trade them back and forth according to their own production needs. He suggested if that happened, we might get a more active reduction in emissions from industries that otherwise merely fight quotas and meet quotas but never go beyond them.

I wondered at the time he mentioned it to what extent things really could be traded back and forth. Can there be a shifting from Inco to Algoma Steel? Are they emitting the same ratios of the same chemicals? Would that need to be regulated with a view to looking at the percentile of emissions? How realistic is it looking at different industries that are making different chemicals?

Dr. Shaw: It depends on your perspective to some extent. I think an environmentalist might say that swapping a rather large point source in Sudbury for a rather large point source elsewhere may be a good idea only if the region that the emission is being shifted to is not sensitive. As you have already heard from previous submissions, there are various parts of this province that are much more sensitive to acid rain deposition or acid gas deposition than other regions. That is one aspect of things. An environmentalist certainly would not want an SO₂ swap to a region that is

already very sensitive, so that this company has purchased someone's rights. That would be a potential problem.

The other aspect is that you may want to put a ceiling on the level of emissions or the total emissions from any one source. That would not help in that regard either.

I also think it is prudent to tie the level of pollution to the level of benefit, in that sense tying so many kilograms of SO₂ per tonne to whatever is produced or consumed. I think that is a prudent method of approach rather than simply swapping large amounts of emissions, which may or may not prove to be desirable from one or more perspectives.

Does that address that point?

Mr. D. R. Cooke: I take it that it would be feasible, provided there was enough monitoring and regulation, and enough care on the part of the government as to deciding the value to the ecology of a trade taking place. Perhaps we would have to have a way of assigning points to the trade and even vetoing trades of emission rights.

Dr. Shaw: The suggestion that trading is possible indicates that one industry, at a fairly modest cost, can achieve greatly reduced emissions.

Mr. D. R. Cooke: That is what he was trying to tell us.

Dr. Shaw: Why not adjust the requirements for that industry to reflect that rather than simply saying: "We will not deal with this issue. We are still only interested in total emission control"? We will accept a fairly high standard universally and say, "You have to put a lid on how much you emit." One industry would then be able to reduce its emissions at fairly modest costs and everyone would be a little bit happier, but I do not see why it would not be feasible to say, "If the emission controls on that industry are so easy to exceed from the point of view of reducing emissions, why not do that independently?"

Mr. South: The marketplace is sometimes more objective than the bureaucrats.

Mr. D. R. Cooke: He was arguing, I think quite rightly from my own experience in my own riding, that it is awfully difficult to get the evidence that an industry can reduce its emissions more than it says it can. Industry often seems to be able to convince environmental officials that it can reduce them only so much. It also suggests perhaps that it will have to go out of business, and all these other problems are raised. Yet he was suggesting that in California, this can be done; situations like this have occurred. The Environmental Protection Agency had agreed it could not go any further, yet once it got into a trading position, suddenly it was able to when another industry came along and offered to buy its emission rights.

Dr. Shaw: There are two aspects of this. First, we must be more diligent as scientists and engineers.

Mr. D. R. Cooke: And bureaucrats.

Dr. Shaw: And bureaucrats, certainly.

The other aspect is that technology does evolve. Perhaps when the emission level was agreed to, that was a reasonable limit based on the

technology levels available. Then subsequently other factors became evident, perhaps being able to make process changes or by eliminating certain parts of their process because market conditions had changed and a certain product was no longer necessary. It may be possible to make modifications.

I am not so sure I would be willing to paint industry completely black. I think we are all grey to some extent. We all have our own individual motives. Change is always a difficult thing to instil in any group of people.

Mr. Chairman: We are honoured to have the chairman of the standing committee on finance and economic affairs here.

Mr. D. R. Cooke: I am honoured to be here. It was just a case of taking two and a half hours to get through Milton.

Mr. Chairman: You can go back to Milton any time.

Mr. Partington: It appears the technology is available for Hydro to meet its 1994 limits, but I think we heard from Inco that the technology currently does not exist. I notice your statement saying that Inco and Falconbridge must make significant process and operation modifications. Does the technology exist now for Inco to achieve the 1994 limit target?

Dr. Shaw: In some senses yes, but in others no, clearly. There are many problems with metallurgical processes. As to dealing with stack gas emissions, if we can get a stream of gas that has a reasonably consistent SO₂ content, perhaps a very low content that is typical of a coal-fired electricity station, then some of the technologies we have discussed already would be applicable. That is not often the case with metallurgical processes. Normally, the SO₂ content is much greater and then the most likely process route is sulphuric acid manufacture, possibly liquid SO₂, or there are emerging processes for generation of elemental sulphur. These streams are much more concentrated.

The only problem with metallurgical processes is that quite often they are intermittent. This presents great difficulties for the operation of a process. You may have a fairly high concentration for a short period of time, followed by a much lower concentration, which would cause a tremendous upset in any secondary process for capture or conversion of SO₂.

The real problem at Inco, Falconbridge and other potential sources would be to try to arrange their processes so they can generate, over time, a consistent composition and a composition that is sufficiently high that it could be fed to a secondary process for SO₂ separation.

There are elements that exist and elements that do not exist. That is why I say there is some technology that can be used, but there are other things required in order to make that work. There are difficulties.

Mr. Partington: What is the likelihood of those difficulties being overcome by 1993?

Dr. Shaw: I do not have a crystal ball.

Mr. Partington: That is like being a soothsayer, I guess.

Dr. Shaw: The work seems to be progressing. If I had more time, I would be more than willing to address those issues. My PhD is in metallurgy,

so there is some compatibility, but that is a fairly long process. In the time that was available to me, I could only address fairly narrow issues.

The thing is, it is not going to be simple. Ontario Hydro, from its use of other fuels and with the technology that exists, can meet the requirements by 1994 and probably will be able to meet them at a relatively low cost, because there is sufficient lead time and it is addressing improvements in the technologies that are there.

Mr. Partington: But you cannot say that with Inco as well?

Dr. Shaw: I do not have the same level of confidence, but I am not saying it is impossible. There is a great deal of work that needs to be done.

Mr. Pouliot: You are a metallurgist. Active ore is highly oxidized and one could say, if you will allow me, Mr. Chairman, that perhaps we are not dealing with a constant. That makes it very difficult in terms of extracting it in the separation of metals.

Dr. Shaw: Yes. There are many problems they have. It is not a simple problem at all.

Mr. Chairman: Professor Shaw, I want to thank you for appearing before the committee this morning. You alluded at the beginning to the possibility that you would fit well within our time constraints and you did, but it was certainly a full discussion.

The committee recessed at 12:10 p.m.

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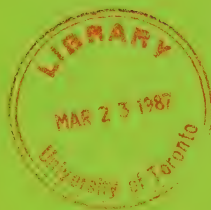
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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

TUESDAY, MARCH 10, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
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Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Cooke, D. R. (Kitchener L) for Mr. Henderson
Epp, H. A. (Waterloo North L) for Mr. Poirier
McLean, A. K. (Simcoe East PC) for Mr. Eves
Pouliot, G. (Lake Nipigon NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Also taking part:

Henderson, D. J. (Humber L)

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

Individual Presentations:

Phillips, Dr. C. R., Professor, Department of Chemical Engineering and Applied
Chemistry, University of Toronto

Keffer, Dr. J. F., Professor of Mechanical Engineering, Vice-Provost,
University of Toronto

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Tuesday, March 10, 1987

The committee resumed at 2:07 p.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: Good afternoon, committee members and guests. We have two more deputants this afternoon.

Our first deputant is Professor Phillips from the University of Toronto. I welcome him to come forward to the witness table. I must advise the committee that Professor Phillips has provided us with a copy of his curriculum vitae, which is extensive. Although he might want initially to address some of his qualifications, I would encourage those committee members who wish to review the full CV to see the researcher at their convenience..

Professor Phillips, I will turn the proceedings over to you. I notice you have lodged some material with us. You may wish to proceed to address us, and then I will invite committee members to ask questions after you are finished.

DR. COLIN R. PHILLIPS

Dr. Phillips: Thank you. I should start out by saying I hope everybody has a copy of the written material, in which case I can refer to it.

The Countdown Acid Rain program that Ontario is embarking upon is really a historic program. There are many benefits to be achieved provincially, nationally and internationally in the long run as a result of the program. As a quick overview, the progress that has been accomplished to date has been quite pleasing. It is a very difficult enterprise to embark upon, and I think all parties concerned have spent a considerable amount of intelligent energy in pursuing these difficult objectives.

I have provided you with my analysis of the program and the response of the various parties to the program, and I have provided some recommendations. I would like to emphasize that the recommendations are essentially in the spirit of promoting understanding. I hope they will further all parties to reach their objectives and not be interpreted in any sense as critical of any of the organizations involved.

It is rather difficult to examine a document or program of some other organization and offer comment without being accused of being critical in the crass sense. I hope that interpretation is not made. This is not to say I have not made a criticism when I felt it should be made, but I have tried to make it in a sense of being helpful rather than destructive.

I have prepared my comments in terms of the organizations, one after another, starting with Ontario Hydro and moving on to Falconbridge, Inco and Algoma--actually not quite in that order--and ending up with some overall conclusions. The overall conclusions and recommendations which come out of the

work are also summarized on the separate handout and so represent a concise version of the recommendations and conclusions.

Starting with Ontario Hydro, it has a difficult task in that it is essentially an electric-power-generating utility. They are not involved in the chemical process industry and they are not involved in the metallurgical process industry. As a result of the Countdown Acid Rain program, they have been forced to become, if you like, part chemical engineer, part process engineer, which is really out of character with their general mandate. This is to point out to them that a lot of these activities will be extraneous to their main mission, which is to produce energy.

Given that situation, I think they have managed to identify all the important options. I have listed the important options that appear to exist. One is the reduction of coal use via generating alternatives. You can use nuclear energy, of course; you can use some form of fossil fuel other than coal, for example, natural gas; you can use a low-sulphur fuel, and natural gas is an example of that.

You can desulphurize the fuel. Actually, there are two interpretations that can be placed upon fuel desulphurization. You can take the fuel and process it to remove the sulphur or you can acquire fuel which has intrinsically low sulphur. Hydro has considered the latter route, at least in the documentation here. I will make some comments on the former route, that is, the desulphurization of coal per se.

Installation of SO₂ control technology is another option. This can be done in-burner, by putting some additive in the combustion chamber or by putting on some process which will process the stack gases.

If you use low-sulphur western coal, there is obviously a cost penalty as a result of transportation and other factors, but all costs being equal, I think it is the obvious choice. The question of cost is something I am not able to address.

If you desulphurize coal--and the simplest form of desulphurization, currently practised by Hydro, is washing--then you lose some of the energy value of the coal, because you simply wash away some of the coal. If you process it by some means, you process some of the value of the coal away and have less heating value, so it is a less effective fuel as a result. That is an obvious penalty, apart from the cost of actually having to process it.

Hydro has not described the nature of the sulphur in the United States coal. The type of sulphur and the way it is distributed within the coal matrix determines how easy it is to get out. Without getting too technical, if it is pyritic sulphur, mineral sulphur, it tends to be somewhat easier to remove than if it is organic sulphur. Which is possible, the type of washing process or a more sophisticated process that you can apply, will depend upon the form and nature of dissemination of sulphur in the coal. The use of limestone injection appears a particularly promising alternative. I am impressed by that strategy.

Desulphurization of stack gases requires extensive plant additions to any generating station, so that is a disadvantage.

All these alternatives, that is, desulphurization of coal, in-burner desulphurization and desulphurization of stack gases, will result in the generation of a high-sulphur waste in some form or another, and this high-sulphur waste will have to be disposed of.

Hydro's submission does not discuss disposal in detail, although, in the material I have read, disposal is said to have been considered. There is discussion in Hydro's submission of the different properties of the different solid wastes arising from the different options, and comments to the effect that some of these wastes are readily leachable, some are not and so forth. I think, at some point, it would be important to undertake a review of the types of wastes and the implications of the types of wastes for waste disposal.

I have listed and made brief comments on the four main options that Hydro is investigating, and this is on the second page of the handout. The lime spray drier process is the first one, the second is the lime dual alkali process, the third one is the wet limestone scrubbing process and the last is the furnace injection of limestone.

I will not make a further comment on those except to point out that, in the description I have provided and in the comments, I have identified the nature of the solid residue that would arise from each of them, and made comments where appropriate, if it seems that the residue has some property that is a disadvantage.

For example, the limestone dual alkali process, which is the second one mentioned, results in the presence of soluble sodium sulphites that would leach out of a waste residue. That particular type of waste would require some more consideration, so I will not go over those in detail, but if there are any questions, we can discuss those.

The choice of a desulphurization option will, of course, then be affected by the nature of the solid waste that arises. An important priority ought to be the development of plans for the waste disposal. If I can now turn to Ontario regulation 662/85, that regulation gives equal weight to nitric oxide emissions and sulphur dioxide emissions on a mass basis. One can unravel that from the technical description that simply says they are counted as equal. You talk about kilograms or whatever of nitric oxide and kilograms of sulphur dioxide and you do not distinguish one kilogram of nitric oxide from one kilogram of NO_2 . They are considered as equal on a weight basis, on a mass basis.

From a chemical point of view, that means that you have given twice as much emphasis to NO over SO_2 , because the molecular weight of nitric oxide is much less than the molecular weight of SO_2 . It is roughly a factor of two; you have actually weighted nitric oxide. You have considered it roughly twice as important on the basis of that equal mass weighting.

There is considerable uncertainty with respect to production of acid rain. It is not at all clear what the relative role of sulphur oxides and nitrogen oxides is, and there is sufficient uncertainty that I think the particular weighting chosen is reasonable. This is not to say it is necessarily best or not best; there is just not very much good evidence. I will just observe that there is actually a weighting given roughly twice as much in favour of NO as opposed to SO_2 . I do not believe that is unreasonable, given the uncertainty with respect to the production of acid rain.

The other point to note, of course, is that the control of SO_2 emissions is much easier than the control of NO emissions. The banking withdrawal arrangements that Hydro is required to comply with are, to my mind, quite reasonable. I think it is also reasonable that withdrawal should not be automatic. The banking withdrawal arrangements are reasonable, simply because

we are talking about a cumulative problem. It is a question of what is the accumulation over time of the acid precipitation, as a result of which it does make sense to have this banking arrangement.

With respect to nitrogen oxide, the use of these modified burner nozzles represents an intelligent strategy, in fact, one of the only sensible strategies you can use. In the case of nitrogen oxide, you really have to attack its generation at source. This is what Hydro has done. It claims the reduction of 35 per cent by manipulation of peak temperature and time, which is really what is involved in modifying burners. That is a good strategy. If you reduced the peak temperature by modifying burners, it also would be beneficial if you wanted subsequently to use limestone injection. This point is also made somewhere in Hydro's documentation, but it is another beneficial consequence of NO_x control.

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The recommendations that I see that would be useful to contemplate for Ontario Hydro--and once again I emphasize that these are not recommendations in any compulsory sense. These are simply the thoughts I would have if I were to ask, "How could we improve the program Hydro has with respect to its own activities and with respect to the Ministry of the Environment?" I would say there are perhaps three of the them, as you see in front of you.

1. The technical details and results of particular projects are not filed in the present progress reports, and I think they should be filed in future progress reports.

2. Disposal options and considerations for solid residues resulting from desulphurization should be reported in detail. The conclusions resulting from that consideration of disposal options will possibly indicate which of these desulphurization options is to be preferred.

3. Although the outlook is probably negative, I think it would be worth while summarizing the status of possible coal desulphurization processes. I have mentioned that in talking about coal desulphurization, Hydro is primarily talking about either acquiring low-sulphur western coal or washing the coal, but there are other possible processes for desulphurizing coal. Flotation, for example, is one of them.

Most of these have major drawbacks, and my own opinion is that there will probably be a negative outlook. I am aware that Hydro has looked into this in the past; how actively I do not know. I think it would be useful to have that summarized, even though it might well be negative. It does complete the picture.

Let me turn to Algoma Steel. Algoma's decision to curtail production essentially solves the compliance problem, but I guess the main observation, which I presented as a recommendation, is that it leaves the company vulnerable. I would think that some compliance plans should be made on a contingency basis, in the event of the need to expand production at some point in the future.

I will now turn to Falconbridge and then Inco. The comments relating to these two companies tend to be somewhat interrelated, and at the very end I have put a combined comment on both of them.

Falconbridge has correctly identified that the solution to the SO₂

emission problem is process-related. In other words, it is not just a question of tacking something on the end of the process. They are investigating a wide range of process modifications and an increased degree of fluid bed roasting to get rid of more sulphur and produce more sulphuric acid. From a simple point of view, you can say that if you have the sulphur in the ore, get rid of it at the earliest opportunity, capture the sulphur dioxide and make sulphuric acid. That is really what that option is about.

With respect to converter slag cleaning, I find that it is not at all clear to what extent this will improve the sulphur emission problem and increase pyrrhotite rejection. I will make some further comment about this. Pyrrhotite is one of the two sulphide minerals, and it is the undesirable one. The more you can get that out of the system, the more sulphur you can remove. It is obviously sensible to remove pyrrhotite; it is also an objective of Inco.

Falconbridge has made extensive use of outside research facilities, and I think that is quite noteworthy. I will not get too technical, but pyrrhotite is a complex iron-nickel sulphide. It contains more iron than nickel and a lot of sulphur. I presented the formula on the handout. Rejection of pyrrhotite is contingent upon the liberation of pyrrhotite from pentlandite. The ore of interest is pentlandite, which is a nickel-iron sulphide, nickel and iron roughly in equal amounts, in contrast to pyrrhotite which has about seven times as much iron as nickel.

Notice that is contingent upon the liberation of pyrrhotite from pentlandite upon grinding. What I mean is that if you take a sample of the ore and you grind it up to a very fine state, then in the ultimate, if you wanted to separate pyrrhotite particles from pentlandite particles, you would have to have some particles of pure pyrrhotite and some particles of pure pentlandite. If you had one particle which contained 50 per cent pyrrhotite and 50 per cent pentlandite, you would obviously be unable to separate the two minerals.

The state of dissemination of the mineral is something which has been determined geologically, and you cannot change that. What you can do is grind it progressively finer. You hope eventually to have a small enough particle that it is 100 per cent, or close to it, of the mineral you want to separate.

It turns out that these two minerals are so close that this is a very difficult objective to achieve. It is extremely difficult to separate them. They tend to be intermingled and, as a result, there is likely to be an intrinsic limit to the separability of them. I think that has to be recognized.

Grinding liberation studies are really to understand how these minerals can be separated, and these are included in the Falconbridge research program, but as a relatively minor objective. I think they are so fundamental to the whole success of the pyrrhotite rejection scheme that maybe they could be more emphasized. You could argue that they are emphasized indirectly, in that you grind and you then try separation schemes to see what happens, and I guess that is true.

Falconbridge undertook a study of their roaster, and in the course of doing that, it found significant in-leakage of air and it found its primary and secondary cyclones were accounting for most of the pressure drop and the secondary ones were not doing too much work. As a result, they were able to make substantial improvements in the process.

I make the comment about this to point out that when organizations undertake reviews of processes for reasons other than for production, maybe

for occupational or environmental reasons, it is quite often the case that they end up with a major improvement in the process, just as a result of having to sit down and go through, and this is a good example.

With respect to converter slag cleaning work, there are few details and results provided in the progress reports that I have perused. From the description provided, the extent of SO₂ emission reduction is not clear. Falconbridge has what they call a supplementary emission control system program, which is, in a sense, the control of the plant from monitoring feedback and measuring the concentrations in the field and using that as feedback to control the process. That is a sophisticated program, and it is commendable.

Unfortunately, it seems to have some difficulties. There are a couple of statements in there together. The second one quoted here, "Because model predictions were essentially random, a meaningful comparison of performance between reactive and predictive modes could not be made," suggests the model developed to date is not successful.

I will have to add a caution, and that is that, given the typical uncertainties one has in modelling the atmosphere, one should not be too optimistic that the degree of accuracy possible in the modelling would be acceptable for engineering control purposes. The point is that it is difficult to model the atmosphere with the precision you would need to control processes. There are so many variables.

On the other hand, the use of these emission algorithms, which simply means that you have a process and you have material flowing through the process and various temperatures, flow rates and conditions and so forth, and if you know there has been a change in some of these flow rates or temperatures or conditions, you can then estimate what that is going to do to the emissions--that is an emission algorithm; you take into account changes in process flow rates and conditions, then use that to estimate what is coming out the end--is a very useful strategy, and it is an intelligent way of bypassing the inconvenience and the lack of timeliness of stack sampling. By lack of timeliness, I mean it is difficult to do it continuously.

In terms of recommendations, I think it would be useful to have technical details and results to a greater extent in future progress reports. I have to make a comment here, and it is not in the text, but I would like to make sure it is on the record.

These companies, Falconbridge and Inco in particular, obviously have proprietary material and commercial-confidential work, and I think it is only fair that they should be in a position to protect that. I am not suggesting they reveal anything which is, in their opinion, proprietary or commercial-confidential. Nevertheless, I think it would be useful to have technical details and results to the extent that one can get some idea of how their work is proceeding.

Second, more than one option ought to be pursued, because no one option is likely to provide the total solution. It is a very difficult problem, and in fact, one would have to have more than one option going. One cannot rely on just one. Falconbridge does have more than one.

The proposed SO₂ emission reduction from converter slag cleaning, which is one of its cornerstones, should be explained in detail. It is not clear from its report how and to what extent this would result in SO₂ reduction. I think that needs to be elaborated on.

The extent of SO_2 emission reduction associated with each proposed change should be estimated. In other words, each option that Falconbridge is evaluating should be accompanied with an estimate of what this means quantitatively in SO_2 reduction.

The degree of accuracy one requires of atmospheric emission control models should be established and compared to what is possible in realistic models. If I rephrase that, what it means is that you are going to use these atmospheric emission models to control the process. Decide with what precision you need the model in order to control the process, and then see whether the atmospheric model can in fact be generated to that level of precision. As I pointed out earlier, there are some difficulties in matching those two levels of precision, and one should not be too optimistic.

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The use of emission algorithms should be developed further. It is an excellent strategy. If I continue, we can move on to Inco and some of the comments that I have made with respect to Falconbridge relate to Inco, and vice versa. There are some commonalities obviously.

Like Falconbridge, Inco appreciates the solution to the SO_2 emission problem is process-oriented and they are also investigating a wide range of options. Their options include, as Falconbridge, increased rejection of the pyrrhotite mineral and bulk smelting. A major cornerstone of their program is a proprietary process for pyrrhotite rejection and this is obviously contingent upon the liberation of pyrrhotite from pentlandite by fine grinding. If you cannot grind it fine enough to get particles, which are essentially discrete in one mineral or the other, then you are not going to be able to separate them. In any event, when you take some pyrrhotite out, you almost certainly are going to be losing some nickel recovery, so that there is a tradeoff. That is demonstrated by some of the results. As for Falconbridge, study of this fundamental liberation process could perhaps be emphasized.

Inco's proprietary process is based on SO_2 air conditioning and I guess it is rather ironic that you are actually using the SO_2 which is the villain and using it as a conditioning agent to make a better process to release less SO_2 into the atmosphere. The magnetic pyrrhotite is fairly easy to remove, and that has been removed historically. It is the nonmagnetic stuff that is the difficult material to remove. That is the targeted material for this particular process. What is done is the pyrrhotite is floated away from the pentlandite and not the other way around. Normally in a floatation process the conventional way of thinking is you float the valuable commodity. The floatation process can be described very crudely as a liquid system in which you have finely ground mineral on which you put a surface-active agent, something like a detergent, which produces lots of bubbles. You then blow air through it. It is not quite as simple as that because you add a lot of other modifiers, depressants and whatever, to it. As the air rises, bubbles rise and attached to those bubbles are certain mineral particles.

The mineral particles will generally fall into two types: those which will like to be wet by the water; those which would like to be attached to air, so that they are either hydrophobic or hydrophilic, which means water-hating or water-loving. Normally you float off or cause to rise to the surface the valuable commodity, the pentlandite, for example. Inco is turning it around and floating the pyrrhotite off, which is the unwanted stuff, and they have a preconditioning step ahead of that, using SO_2 and air. That is an excellent strategy and it is to be hoped that it will work well. New

floating processes are very difficult to develop. It is a very complex system and they are only developed with a lot of effort.

Bulk smelting is the other option that Inco has identified and this involves the use of oxygen to produce a higher SO_2 content and, as a result of that, you can take this higher SO_2 content air and make acid from it. One cannot draw any conclusions about this yet because there are test plans for 1987 which ought to provide a verdict on the viability of the process.

Inco makes the comment somewhere in its document on the market situation for sulphuric acid, which I find puzzling. It may have a simple explanation. The transportation costs for sulphuric acid are high. That is well known. It is not a very high value commodity. However, Sudbury is closer to the markets, which Inco identifies as being in the US midwest, much closer to the market than Japan from whence the major offshore market pressure arises. I am not quite sure what the explanation of that particular conundrum is.

There is also a statement, which is interesting in light of the current free trade negotiations, to the effect that, "Any significant increase in tonnage sold from Canada--" this is sulphuric acid sold into the United States--"may only be achievable at severely depressed prices, and could face legal obstacles." I just make that observation.

With respect to recommendations on the program that Inco has undertaken, I think it is highly desirable that they continue to vigorously pursue major alternatives or adjuncts to the pyrrhotite rejection programs. They are in fact doing that. They have identified bulk smelting. The reason I say that is I think it is wise to have more than one arrow to your bow, so to speak.

The proposed SO_2 emission reduction from bulk smelting should be explained in more detail in the next progress report. In fact there are test plans for 1987 which will shed light on that.

The extent of SO_2 emission reduction associated with each proposed change should be estimated, and that would be very helpful.

As I mentioned, the competitive pressure from Japan on sulphuric acid markets should be explained. I just do not see the explanation of that; it may be simple. Inco should consider developing emission algorithms, as Falconbridge has, to relate changes in process parameters to the emissions.

If I may now turn to a composite summary of Falconbridge and Inco, as I have mentioned on two or three occasions, the pyrrhotite and pentlandite minerals are intimately associated. I have once again repeated their formula on the page in the text. If you inspect that, you will see how similar they are. It is therefore not surprising that they are intimately associated. It is rather difficult to separate them. There is then the real possibility that there may be an absolute limit to the pyrrhotite rejection that one can achieve without doing sufficient economic damage to the nickel recovery. Expectations for solutions should be realistic.

Any additional pyrrhotite rejection will result in more pyrrhotite to be disposed of into tailings areas. Pyrrhotite is currently disposed of in the center of tailings dams by Inco; only the quantity would change. Pyrrhotite is a sulphide mineral and is easily oxidized in the environment to produce sulphur acid, so it does require some careful planning and operation of tailings areas.

The development of atmospheric models useful for the control of emissions is a desirable objective, but one should not be too optimistic with respect to how successful these may be. This is simply a reflection of the difficulty of modelling the atmosphere. Emission algorithms, on the other hand, are much more accurate and worth while.

Improvements possible by various process options by both companies would be more clearly explained if they they were to develop a sulphur, sulphur dioxide or sulphur moieties flow sheet; that is, a sulphur flow sheet. In other words, if they had a flow sheet which showed where sulphur was going in the process, where it was being emitted and where it was going from one stage to another, it would be very helpful in understanding the improvements they are proposing to make.

Finally, as a set of overall conclusions, first with respect to Ontario Hydro, based on technical considerations, it is likely that Hydro will be able to reduce its SO₂ emissions to compliance levels. Much of the technology being investigated has been used successfully elsewhere. The reduction in NO_x which Hydro has been able to achieve by use of modified burners is substantial; it is about 35 per cent.

Algoma Steel may be unprepared for any future production expansion that appears warranted by changed economic conditions.

With respect to progress at Falconbridge and Inco, in my opinion it is too early to forecast success in their programs to comply with their SO₂ emission schedules. Both companies appear to be pursuing their research vigorously and intelligently. Success for these companies obviously has both technical and economic components. Falconbridge and Inco are not dealing with proven technology, and their ultimate success is more uncertain than that of Ontario Hydro.

Atmospheric emission control models are desirable but may not achieve the level of accuracy required for control purposes. Emission algorithm models are much more accurate and useful.

Last, with respect to Falconbridge and Inco sulphur moiety flow-sheets, the complex flow of sulphur, sulphur dioxide and other sulphur moieties could be analysed more readily if sulphur flow-sheets were used to show existing and proposed flow rates of the various sulphur species to their various destinations.

Mr. Chairman: Thank you very much. There is one thing I would like you to comment on. When we travelled to both Falconbridge and Inco, they point out to us where most of their emissions were coming from. They indicated that as far as they knew--and I may be getting more into mechanical engineering as opposed to chemical engineering--the technology would not allow them to capture those emissions which I believe were in the converter stage. The hoods they have been trying to develop to capture the emissions would not allow them to have total capture. Would you have a comment on some way other than mechanical they might look at?

Dr. Phillips: I think what you are referring to are described technically as fugitive emissions. It is an interesting name.

Mr. Chairman: They are, yes.

Dr. Phillips: A fugitive emission is something you are chasing

after, but it is something which is ill-defined and it comes from places that are not really controlled; in other words, not a stack.

They are very difficult to handle and the major way of dealing with them is, generally, to tighten up the process. It is somewhat easier to do this in a chemical plant than in a metallurgical plant. A metallurgical plant is a very large-scale plant dealing with high temperatures and rather difficult conditions. It is not easy. I think one must try, but there will be, undoubtedly, in any pyrometallurgical plant there will be some noise level or background level of fugitive emissions below which it is very difficult to go.

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Mr. Pouliot: Just a brief comment, if I may. I am just seeking clarity. You will readily understand that, although you have come close to turning the art of metallurgy into a pure science, and I can appreciate the phenomenon--in a real mill, you would have a 15,000 to 20,000-tons-a-day operation. We know Inco and Falconbridge are massive operations, and that Inco is the largest copper producer. Copper is not a byproduct. The marketplace or the price of those commodities will decide which product is more important.

You have mentioned repeatedly the need to achieve a finer grind. I am sure Inco and Falconbridge would immediately jump up and say, "A finer grind will overload our circuit because we will need a secondary process of grinding to get at the circuit. We may have a slime condition emanating from that process. Then it is going to create havoc with our flotation system, and what we cannot get there we will pay for at the other end, which is the smelting end."

I have never been to Inco or Falconbridge, but I am wondering if you are satisfied that they have installed all the necessary devices at the head of the circuit, let us say, to enhance or keep their pH constant before going to any secondary phase?

Dr. Phillips: I have not discussed the comments that I have made before you with either company. If I can comment on the grinding, grinding is very expensive. Essentially, what you are doing is creating a new surface area and that surface area requires energy to make it. It is obvious that if you smash a rock, it is an energy-intensive exercise. If you smash it up from brick size to very fine powder, it is a very expensive exercise, so there is a limit to what you can achieve by grinding.

You may be interpreting me slightly wrong, but that is why I say there is likely to be a limit to the rejection of pyrrhotite that you can achieve by the means that these companies are pursuing. There will be an intrinsic limit, based on the difficulty of grinding to very fine size. You can grind to a certain size, beyond which it is uneconomic to go, beyond which at some point there is no technology to go.

Does that help?

Mr. Pouliot: Yes. We are going through the grinding process and we are together with you. I do not want to monopolize the time but we are then into the flotation process. You have talked about the process of separation and the coating of the bubble that you mentioned. It has been the experience of some that if you grind too fine, you create a backlog because you have to have two grinding processes, a primary and a secondary grinding process, and then you create your backlog at the flotation system.

In order to float or to depress, whichever route you wish to follow--and there has been a reversal of style, method and approach in terms of Inco--you must then add an additional chemical, either a promoter or a depressant. Now you start paying the price again because you serve a purpose at the primary end, and in your flotation system you have to add again. That creates other problems.

Dr. Phillips: Yes, indeed. If you grind too fine there is obviously the question of slime handling to be dealt with. I think it just emphasizes the point I made earlier that there are limits to the pyrrhotite rejection that you might expect. I just want to make sure that people do not look at the scene through rose-coloured glasses.

Mrs. Grier: Dr. Phillips, I was struck by something you said quite early in your presentation when you were commending Hydro for the progress it has made. You used the phrase, "reduction in SO₂ was after all, extraneous to its main mission." I would like to challenge that a bit because it seems to me the production of hydroelectricity is, okay, their main mission, but surely if they have in the past been allowed to do that without any reference to the environment, that does not necessarily make it right.

Dr. Phillips: No, I am not talking about whether it is right or wrong. I am simply saying their main mandate is to produce electricity. They have to do a lot of other things that are more peripheral to that main mandate, and this is one of them. I am not suggesting it is not important, but it is on the sidelines, if you like, with respect to their main mandate.

Mrs. Grier: But could Inco or Falconbridge not make the same comment, that their main mandate is to produce nickel?

Dr. Phillips: Sure; definitely.

Mrs. Grier: You are not making a distinction between what ought to be required of one as opposed to the other.

Dr. Phillips: I am making a distinction in the sense that the main expertise of Ontario Hydro is not in chemical engineering or metallurgy, for example. The technical base of Inco and Falconbridge is chemical and metallurgical engineering, so pollution control technology is second nature to them, I guess you would say, because they are the same techniques. It involves process revamping, add-on technology and so forth. For an organization that largely runs turbines and so forth, whether they are nuclear or steam-powered, to get into chemical processing is a step out of its traditional sort of roles. That is the main distinction I want to make; that is all.

Mrs. Grier: When you use the term "process-rooted" to refer to what is happening at Inco and Falconbridge, can you explain to me what that means?

Dr. Phillips: That means they recognize it is a question of modifying the process they are using to produce nickel.

Mrs. Grier: Rather than entering into a new process.

Dr. Phillips: Rather than just tacking something on the end. You could make the extreme analogy and say tacking on some sort of scrubbing device could be contemplated. Technically and economically, that just is not on, but that would not involve the process per se. My point is that the problem is process-rooted. You have to change the process; you cannot just contemplate adding something on the end.

Mrs. Grier: I guess I also need to have explained to me some of what you said on page 3 about the NO_x and the SO_2 . As I understand it, Ontario Hydro had done something about the NO_x at Nanticoke but had not included the same kind of reduction in NO_x in what they were experimenting with at Lakeview. Is that correct?

Dr. Phillips: As far as I recall, that is correct.

Mrs. Grier: Is there any reason why what they now are doing at Lakeview could not include something to reduce NO_x ? Are the two processes quite separate?

Dr. Phillips: No, they are not. If you are experimenting with, say, a sulphur dioxide removal process, you would probably be wise to make sure you master and understand that before you start to mix something else in with it at the same time. Once you have it sorted out, then you maybe could consider dealing with the other commodity, with nitrogen oxides.

From their point of view, they are required to comply with rather specific regulations. They are in our reg 662/85. Those regulations lump together the sulphur dioxide and the nitric oxide, with a few amplifications of that general statement. So they do have some freedom in choosing how they ought to comply and that is quite legitimate. That is the framework they have been given in which to operate.

Mrs. Grier: Again, I guess I would question your use of the word "legitimate." It is the framework they have been given. The decision of whether or not it is legitimate, presumably, is not a technical decision.

Dr. Phillips: No, it is a decision that has to do with what they are required to do by the regulation.

Mrs. Grier: So when you talk about the banking withdrawal arrangements and you say about twice as much NO_x as SO_2 is allowed in the banking, can you explain that to me, and also whether or not we ought to be concerned about that and whether or not the banking provision, assuming it is allowed to remain, should be rewritten to reflect somehow some difference between the two?

Dr. Phillips: To take the latter question first, I am of the opinion the banking arrangements and the waiting are satisfactory.

To try to answer the question of what it all means, it is said that emissions of sulphur dioxide and nitric oxide, etc., shall not exceed in the aggregate so many kilotonnes. In other words, you count a tonne of nitric oxide. It is the same as a tonne of sulphur dioxide. You might have a few tonnes of nitric oxide over here and a few tonnes of sulphur dioxide over here, and you add them up. You compare with the target, which is written in this paragraph. If it is less, then you have complied. There is no suggestion that you count a tonne of nitric oxide as equivalent to two tonnes of SO_2 or half a tonne of SO_2 , for example.

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From a lay point of view, this might sound as if they are equal, but from a chemical point of view, they have different molecular weights. Nitric oxide has a much lower molecular weight than sulphur dioxide. It is roughly a factor of two, which means you have roughly twice as many molecules of nitric

oxide in a tonne of nitric oxide as you have molecules of sulphur dioxide in a tonne of sulphur dioxide. If I am making it difficult, I do not want to go too far, but that is really the distinction.

Mrs. Grier: I suppose we do not yet know whether it is more dangerous to leave in NO_x as opposed to SO_2 ? We are assuming there is no distinction between the harm caused by each of them by allowing them to be lumped together.

Dr. Phillips: We are assuming there is no difference on a mass basis because the regulations are written on a mass basis--equal mass, equal number of tonnes. There is a lot of uncertainty if you ask, is acid rain produced by 50 per cent sulphur dioxide and 50 per cent nitrogen oxides, 20 per cent SO_2 and 80 per cent NO_x or 80 per cent SO_2 and 20 per cent NO_x ? The answers to these questions are not known with precision. It is a very difficult area and there is a lot of uncertainty. That is why I am quite satisfied with what I see.

Mrs. Grier: We have had a number of submissions around the whole question of whether there ought to be banking. Do I take it you are saying that given the government has agreed to have a banking provision, the way it is drafted is acceptable?

Dr. Phillips: Yes, I find it quite reasonable.

Mrs. Grier: You are not making a judgement on the merits of banking versus no banking.

Dr. Phillips: Yes, I am; both. I think the banking arrangement that I see is reasonable and I think the principle of banking makes sense for something that produces acidity in precipitation. It is a question of, what is the accumulation of acidity over time? From that point of view it is reasonable that if the acid precipitation is low now and higher later on, the average over that total period will be somewhere between the two. It does make sense.

Mrs. Grier: In saying that, you are not then taking into account any consideration as to whether various peak levels of emissions may have very deleterious effects on human health.

Dr. Phillips: Right. Extreme excursions, extremely high peak levels, may well have deleterious effects but there are some precautionary measures in the regulation requiring Hydro to seek approval from the ministry before taking advantage of this sort of banking arrangement.

Mrs. Grier: You make the interesting point that various options should be explored in the techniques available to them. I would be interested in having some comment from you on how reasonable it is of us to expect them to explore a variety of options and how far down the road with each option they can reasonably be expected to go before a decision is made, "Okay, this is the option in which we want you to invest a considerable amount of money."

Dr. Phillips: I am not sure. I think they have to have as much freedom as possible in exploring whatever options they want, and this is a general comment with respect to any of the organizations involved. They have to have as much freedom as possible in exploring whatever options they wish to identify as being potentially useful.

In the last analysis, they are certainly required to comply with this set of emission schedules, so many kilotonnes of SO_2 at a particular point in time and so forth. There is no requirement that they do it by a particular type of technology. That is really not specified. Indeed, it should never be specified because that is really suggesting that someone can second-guess ahead of time what the best technology might be. It has to be left to them to determine. At some point, the organizations will come to some conclusion as to which is the right technology. They will then say, "We believe this is the one to go with and we are going to go with this."

Mrs. Grier: When you say that no one option should continue to be pursued, the regulation requires that, at the end of 1988, they have to submit to us a plan as to how they are going to comply.

Dr. Phillips: Let me explain it. That comment is with respect to the two mining companies, Falconbridge and Inco, and is made because their problem is extremely challenging. My conclusion is that at this point, it is not at all clear that "success"--in quotation marks because success has, as I said, a technical and economic component--is assured in the case of Falconbridge and Inco. It is a very difficult problem. I think they ought to be exploring more than one alternative. I am sure they see it the same way for self-preservation. They have already done that. If you look at Inco's first progress report and go on to its second progress report, you will see that it has dropped out of continuous smelting. They examined it and it turned out to be nonviable.

At some point, some of these turn out to be nonviable and you drop them out. Others may surface as being potentials. You examine them and you come down to a short list, ultimately one or maybe two, but you keep them like arrows in your bow as long as possible, if they are viable.

Mrs. Grier: I have one final question. One of the criticisms of the Countdown Acid Rain program that has been made is that it does not attempt to control the whole variety of small sources of SO_2 that exist. I do not know whether you are in a position to comment on whether technology is available for a whole host of other contributors to the SO_2 problem or whether it would be reasonable to begin to put some regulations on those other resources.

Dr. Phillips: Small sources tend to be more difficult to control simply because you cannot apply as sophisticated a technology, in general, to the small sources. There are some exceptions. The internal combustion engine in the automobile is a good exception. There is quite sophisticated technology in the average car but that is because it is being mass-produced and, these days, has all computer control and so forth. In general, if you have sort of a heating system or whatever, you cannot afford to have much in the way of sophistication.

Coming back to your main question, which has to do with whether the program should concern itself with the small sources as well as the major sources, that depends upon--I do not have the numbers in front of me--the aggregate emission from these large sources we are looking at compared to the aggregate emission from the small sources and the distribution of the emission. The distribution, if it is all in one location may, for example, cause more damage than if it is widely distributed. I think that if you have to start, then you have to start with the big ones. That is the way I see it. I think this is a logical way to begin a program to control acidic gas emission. At some point, you then have to ask the question, "Do we have to go any further?" It is not clear to me whether you have to go further or how far

you have to go. I think that really to be determined as time unravels the problem.

Mr. McLean: Page 5 reads, "In the course of surveying the gas-cleaning system on their roaster, Falconbridge determined that total air in-leakage was large (60 per cent) and represented a significant load on the off-gas-handling system, and that the combined primary and secondary cyclones accounted for 70 per cent of the total pressure drop, with the secondary cyclones capturing only eight to nine per cent....These discoveries led to a program to locate and reduce air infiltration." Seeing that you have never visited that operation, where did you get your facts with regard to the percentages that were based in this?

Dr. Phillips: I said I did not discuss the comments I am making here with the companies, and I did not. I had visited Inco previously, some years back. I have not visited Falconbridge, at least not that I can recall. The facts I am commenting on are strictly and only the facts provided in the supports and the package of material passed to me. I presume it is the same package you all had. I am only commenting upon that, on what is said there. They are essentially claims by either the company or the Ministry of the Environment.

Mr. McLean: I would like you to give me a little clearer picture on your interpretation of the banking. I was listening to some of the questions that Mrs. Grier had and I was not too clear on your definition of how it would really work. Can you explain that?

Dr. Phillips: The basic idea is that, if you are Ontario Hydro, you are allowed to emit a certain amount of acidic gases. It is defined in terms of SO_2 and nitric oxide. I am looking at the regulation now. For example, paragraphs 1, 2 and 3 refer to the sum total of SO_2 and nitric oxide. Then you move down to paragraphs 4, 5 and 6, and you see it refers specifically to sulphur dioxide.

There is a double-barrelled straitjacket, if you like. The first straitjacket is, "Thou shalt not emit more than an aggregate total of the sum of these two." The second one is, "Thou shalt not emit more than a certain amount of SO_2 ." That, in a sense, defines both the nitric oxide and the SO_2 .

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Mr. McLean: I think you have explained it. I know what the regulations are. I just thought you were on a little different wavelength.

Mr. Partington: You emphasized, as I think others have, that Ontario Hydro should reach its objectives by 1994 but that Falconbridge and Inco might have some trouble. We heard from Inco that it has technology to achieve a 50 per cent reduction but that 60 per cent requires completely new technology and might not be achievable. Can you explain what technology would exist for the 50 per cent and why it would be difficult to get from 50 per cent to 60 per cent?

Dr. Phillips: I cannot comment on the actual magnitude of the reduction that might be possible, but it is 50 or 60 per cent. It goes beyond my ability to make a judgement, because it requires data which I do not have access to and detailed knowledge of Inco's or Falconbridge's operations.

If they are claiming they will have difficulty in complying, I am not sure I necessarily agree that it could not be done. I simply say it is difficult. Most things can be done if you are willing to pay sufficiently for them. If you want to throw away a lot of nickel, if you want to cut your nickel recovery substantially, you can probably do wonders for the sulphur emission problem by rejecting a lot of pyrrhotite and some nickel with the pyrrhotite, but that really does not help a company which has to survive.

Mr. Chairman: Thank you very much, Dr. Phillips. We appreciate your appearing before the committee this afternoon. The recommendations you presented to us for all four of the companies are particularly appropriate.

Our next deputant is Professor Keffer. Perhaps he would like to take the seat formerly occupied by Professor Phillips. Professor Keffer is a mechanical engineering expert and will address the critique on Countdown Acid Rain from that perspective.

I believe you have some comments in written form, which are just being handed out. If you will proceed with your presentation to the committee, I will wait until after you have finished with your entire presentation before entertaining questions from the committee.

DR. JAMES KEFFER

Dr. Keffer: Thank you, Mr. Chairman. What you have before you are some notes which I think will serve as a general introduction to my view of Countdown Acid Rain and what has been achieved over the past year or so. The best thing for me to do is simply to walk you through these comments. I will embroider them as necessary.

I will concentrate on the special problems facing Hydro and the variety of options it is contemplating in order to meet its acid gas limits. I can also respond to questions on certain aspects of the approach taken by the other three major emitters, for example, the tailings area disposal sites at Inco and the ground level concentration measuring system Falconbridge has put in place to try to control its process.

Since I am not a chemical engineer nor a metallurgical engineer, I cannot give you details on the pyrrhotite rejection techniques or the smelting process, so my value to your committee will be somewhat limited.

I will turn to Ontario Hydro and what it has put forward in the way of a program. The exhibit you supplied to me, 2/1/7, establishes quite succinctly the staged, targeted limits for acid gas emission for the four major contributors over the period from 1986 to 1994, in particular that one paragraph 662/85, details the limits of SO₂ and NO_x for Hydro. In particular, that one paragraph, 662/85, details the limits of SO₂ and NO_x for the Hydro.

In that package I did not find any information to tell me how these limits were originally determined, for instance, in Ontario Hydro's case, what its share of the emission target should be, but I can assume that the process for making the judgements had been agreed to by the four emitters and, if not so, they at least had some consultation in the process. I really make that comment by way of a question rather than anything else.

Clearly the unique aspect of the Ontario Hydro situation concerns its permission to bank emissions under certain conditions. I have listened to your

discussion with Professor Phillips on that and I can see it is a matter of some concern for some of you.

Ontario Hydro's first progress report of July 1986 describes in some detail the special problems that Ontario Hydro has identified that it faces. It has a mandate to supply the electrical needs of the province. I suppose one could say that mandate assumes that it has to be done at a reasonable cost. At the same time, it has a requirement, as pointed out by one of your committee members, to act as a good corporate citizen in reducing the levels of SO₂ and NO_x discharged from its coal-fired generating stations.

In a way, I perceive that as a fundamental conflict in its mandate, but this has not deterred Ontario Hydro from taking an initiative in establishing reduced levels of acid emission. Indeed, those reductions took place before the Countdown Acid Rain program. There were significant reductions in 1984 and 1985, and that appears to be continuing at the present time.

From an engineering and strategic point of view, the Hydro approach is a good one. Its best approach is to look at a wide range of options: a portfolio or menu of solutions. Each of these, in principle, can contribute to the problem--partially alleviate the problem--but the main thing to do in this period up until December 1988 is to decide which is the best option. It takes time, it takes money and it takes ingenuity to decide what the best solution is going to be.

I am impressed with Hydro's imagination in identifying a wide spectrum of options. Each one of these could contribute in a significant way to the solution, and we do not yet know which is the best option.

Hydroelectric power is environmentally the most attractive solution, but almost all commercially viable sources in Ontario have been developed now. If one were to contemplate an expansion of this part of the inventory, one would have to purchase power from other sources; hydroelectric power from Quebec, for instance. I do not know whether this is in the best interests of the province. There are political decisions here that go beyond my competence or mandate to discuss, and I leave that with you.

In a sense, nuclear power offers the next cleanest solution, if we look only at the acid rain and the particulate emission problem. To my knowledge, at present no new plants are planned beyond Darlington, so what happens beyond 1994 is an important question to me.

As you will see from my submission, I think that Ontario Hydro will not have a problem up until 1994 but beyond that point, as coal-fired generators come back into play, we may be facing a serious situation. I go on to say in this small presentation that even though the projections indicate that Hydro can continue to meet its target levels, expected increase in power demand in the mid-1990s presents Hydro with a potential problem. It stresses that. It recognizes that clearly.

There are alternative fuels technically available: oil, natural gas, perhaps biomass, perhaps hydrogen as generated from nuclear power. These things are issues that have been examined before. Beyond 1994, the major demand could fall on conventional fossil fuel. This requires a careful assessment of the characteristics of the fuel and the acid emission that would result from its use.

One could elect to purchase low-sulphur coal, but that could be very

expensive. The source markets are not as close to Ontario as the high-sulphur fuels, and no matter what fossil fuel is used, whether it is low-sulphur or high-sulphur coal, as demand for electricity rises inexorably, at some point the treatment of the waste gases has to be addressed. The work Hydro is doing now will pay off in the very long term as well as the short term.

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Those options, of course, deal with what is the best mechanism for dealing with the combustion gases. Hydro is looking at four technologies: a lime spray drier process, limestone dual alkali scrubbing, wet limestone scrubbing and limestone injection directly into the furnace. This is a fairly straightforward and appropriate way to go in assessing existing technology.

Parenthetically, I would say one must keep options open. Devices as yet unthought of could come on the market and might address the problem in an appropriate way. The lead time for that sort of development, however, precludes any use in this immediate problem of reducing acid rain to the stage-targeted emissions promulgated in 1986.

I cannot comment on the other major sources in detail. I could give you an impression of how I think they are rising to their challenge. The situation with Inco, Falconbridge and Algoma is a fundamentally different situation from that of Hydro. Hydro's mandate is to supply electrical power to the province, and certainly that operation is subject to considerable public scrutiny, but the mandate is exclusive in the sense that it is without competition.

That is not the case with the private companies. If they are to survive, they must remain competitive on the world market, and there is no captive market for the companies. Algoma is in very great trouble, so it is down-sizing. One has to examine then the difficulties faced by the competition these private companies exist within.

I am not surprised that they tend to be more cautious and even reluctant, by comparison with Hydro, to venture into what could be expensive solutions; yet in every case I see a corporate responsibility to the public in the submission from these companies. They understand very well that the public cannot pay a continuing penalty for the manufacturing that has been taken as a given over the past few years, and I believe that corporate responsibility is evident in their approach to the situation.

Mr. Chairman, I think I will leave it at that. If I could just skip down to the summary, the last few items on my report, I would say the Countdown Acid Rain program, to my mind, has had quite noticeable and notable success so far. Acid gas emissions have dropped to target levels and below in every case. I think the initiative of the provincial action and the industry response--by that I include Hydro--is exemplary.

Mr. McLean: Professor Keffer made some interesting remarks. Seeing that Darlington is going to be completed by 1992 or 1993, you are talking about what is going to happen after 1994 with regard to the emission control. What do you feel will happen after 1994?

Dr. Keffer: I am not a seer and I cannot really do much more than give you an educated guess. The long lead time required to put new nuclear power stations into existence will mean that Hydro will have to rely on conventional fossil fuel sources for a significant period. That could be as long as 20 years.

This means one has to come to grips with the particular problem of what to do with the acid emitted from those fossil fuels. It means that we will be stretching our resources to the limit in terms of trying to use present technology to treat that gas. It is of tremendous importance at this stage that we encourage Hydro to get on with the technology of scrubbing, limestone injection and so on in a way that will meet the critical period beyond 1994.

Mr. McLean: There is money being allotted now for the ministries of Environment and Natural Resources to do studies to determine whether there is more water power available in certain areas across the province. Do you not foresee that there could be many more water-powered dams and conventional projects that would take the place of some of the fossil generating stations?

Dr. Keffer: The major sources have probably been developed, but of course there are sources available. It is a matter of money for transmission costs and how far away these sites are from the populous centres. Every aspect should be explored, however. I am not aware that money has been made available to source out new hydroelectric power installations. If so, I applaud it. It is an option we should not ignore.

Mr. McLean: Perhaps buying power from Manitoba and Quebec.

Dr. Keffer: Yes, those certainly are alternatives and of course it is environmentally clean. From a federal point of view, everybody benefits. From a provincial point of view, I do not know; I do not have a grip on the politics.

Mrs. Grier: Professor Keffer, can you perhaps expand a bit on your comments about the tailings management problem? We have not gone into that in any great detail.

Dr. Keffer: I should prefix any comment I make by saying that the only information I had available was the report they supplied to me. Although I have worked on tailings situations before, we have really been looking at the fugitive airborne emissions from those tailings sites, in particular the uranium mining tailing sites. If I look at the hydraulic aspect of those tailings areas, I am impressed with the scope of the plan and the degree of engineering thinking that has gone into that planning in terms of the water coverage, the staging of how the coarse tailings are precipitated out first and how the dams themselves are built up in a retaining situation.

More than that I cannot say, except that it appears to be well thought out and reasonable state-of-the-art engineering. It is not dramatic. There is nothing exciting about a tailings area and it is not very pretty. Nevertheless, I think what they are doing is consistent with the objectives of the program.

Mrs. Grier: Have you been involved in acid rain control over the years? What is your expertise with it?

Dr. Keffer: My expertise has to do with long-range transport of all gases discharged from a variety of sources in meteorological situations that would cause local problem areas such as incipient down-washing in the vicinity of these plants and the concentration limits and so on. In my particular research group, we have done quite a few studies on sources of emissions and what happens to these sources, where they end up and so on.

Mrs. Grier: I noticed that in your comments on Falconbridge you

talked about its ground level concentration system. Could you tell us a bit more about that? One of the concerns that has been raised by other witnesses has been the efficiency of the monitoring systems that are in place and whether we really know what the emission levels are.

Dr. Keffer: There is not a lot in the report to make a judgement. The information is pretty sparse. The concept, however, is reasonable if one takes the receptors and examines how those receptors will respond and how they can control the exhaust gas emission. I believe the concept makes sense from a scientific and engineering point of view. If you can be more specific about the criticism of the--

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Mrs. Grier: I am not sure I know what the concept is that they are using, so perhaps I need to have explained to me what you mean by their ground level concentration system.

Dr. Keffer: As I understand it, if one takes a number of receptors located at a specific place in the vicinity of the stack that is emitting the gases, one can take readings of the "instantaneous," five-minute average levels of concentration of sulphur dioxide from the stack, feed that back into the system which will respond to high levels of concentration, and therefore control the furnace process. I am not sure what the process would be in that furnace. It is a metallurgical process. But if one could implement a control in response to that level, that output reading, then the local incidence of impingement of SO_2 , the local value of SO_2 , would be reduced.

That is a response to a local condition. How that relates to long-range transport is another problem entirely. Clearly, if you cut down the process that is producing SO_2 over a short period of time, you are going to reduce the total acid being emitted into the system over that period and the total acid at all points within the environment. What this does is to try to create an algorithm that relates local incidence to long-range transport. There is a difficulty in doing that. One needs the particular model to handle that, a numerical and environmental model, but I think it is an interesting and reasonable approach.

Mrs. Grier: Presumably those ground level concentration monitors would not necessarily reflect a sudden peak of emissions because those emissions might not happen at that point.

Dr. Keffer: That is true.

Mrs. Grier: Or they might be being transported further away.

Dr. Keffer: That is true, and in setting up the receptor sites, one has to be very much aware of what the prevailing wind conditions are and where the most likely high incidences are going to be. From what I can determine, that is built into the receptor model location site.

Mrs. Grier: You made a comment in your section on Hydro about the lead time required for retrofitting. I wondered if you could give us any idea of what you feel that lead time ought to be, or to put it another way, whether you feel the work Hydro now is doing is on a timetable such that it could perhaps be in a position to retrofit its coal-fired plants before it needs to use more coal in the early 1990s.

Dr. Keffer: It appears to me that two types of lead time are needed. There is the lead time associated with the technology; there is another lead time that is apparently required to get legislative approval for putting the technology in place. They comment on both of these in their documentaton.

I will not say much about the latter, but in the former, what they are doing now with the pilot studies they have in place will apparently give them enough information to allow them to put retrofit devices in place in time to look after what I have said could be a critical situation beyond 1994, because it appears the nuclear power coming on stream now is going to look after their problems up until 1994 and maybe a good distance beyond that. So much depends upon demand, and it is almost impossible to predict the demand. The swings are wild, depending on what the public mentality is at any particular time with respect to conservation, for instance.

Mrs. Grier: Are you prepared to confirm to us that what Hydro is saying about its ability to have that technology in place is correct, or are you merely saying you understand that is what Hydro is saying?

Dr. Keffer: They do not give much in the way of detailed information and will not, of course, have that information until their December 1988 target date on specifics of what their technology will be and how much it is going to cost. At this time, they are exploring on a variety of fronts at least four systems and probably more. I do not think I can assess at this time whether any one of those is going to be successful. They have to look at all their options at present.

So much of it is a matter of degree. One can use a given technology, and by incremental improvement to it, get the last few per cent or approach the last few per cent of extraction. In a sense, it is never ending. One can keep throwing money at it and getting improvement in the technology, which will eventually keep reducing that.

Of course, where the difficult question lies is the cost-benefit analysis of throwing more money at the technology in order to extract what might not be a reasonable number of percentage points. In fact, two or three kraft mills down the way might be producing more than that last few per cent, and the money could be better directed at those kraft mills.

Mr. Chairman: Professor Keffer, thank you very much for taking the time to appear before the committee today.

Dr. Keffer: Thank you.

Mr. Chairman: Members of the committee, I should take a couple of minutes and mention what is on tap for the balance of the week in that we have had some changes in our scheduling and all the committee members may not be aware of them. Tomorrow morning we will have Ontario Hydro officials back to make a presentation to us. Immediately at the end of their presentation, or in any event in the afternoon, we will have Ministry of the Environment officials here. They will also be here on Thursday morning and the minister will be back. The clerk is passing out some material.

Mrs. Grier: Homework.

Mr. Chairman: Yes, homework, as Mrs. Grier just indicated, for us to stay up late tonight and read so we will be prepared for the sessions with the Ministry of the Environment beginning tomorrow. As you recall, there were

several questions to which we asked them to provide answers and some of those answers will be within the material you have.

In the afternoon of Thursday, Mr. Manson and others will be here from the Department of the Environment to provide us with the federal perspective. I am sure we will all have lots of questions to ask of them. Until tomorrow morning at 10 a.m., the committee is adjourned.

The committee adjourned at 3:27 p. m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, MARCH 11, 1987

Morning Sitting



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LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Wednesday, March 11, 1987

The committee met at 10:06 a.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: This morning we have Ontario Hydro with us again for another go-around. I welcome Mr. Campbell and the officials from Hydro. I would ask those of you who are speaking to make sure you speak into the microphone so that Hansard can pick you up.

Mr. Campbell, do you have any comments you would like to make to the committee about some of the evidence you have heard since you were here?

ONTARIO HYDRO

Mr. Campbell: Thank you. I have just a few comments to make to the committee. First, we appreciate the chance to come back again on this question. I gathered from reading the transcripts of your work that there is a strong desire to push ahead with reductions in acid rain and acid gas as fast as we can.

Ontario Hydro is doing that right now. We are meeting the target set by Countdown Acid Rain and we are surpassing it. We have demonstrated our commitment by reducing our emissions by 37 per cent over the last two years. At the same time, we are increasing our electricity supplies in a growing economy and we are holding down rate increases.

We have a program in place to meet the limits into the mid-1990s. However, our success in recent years is just a prelude to the challenge we face in the 1990s. We handed out a document to you with a chart on page 2.

Mr. Chairman: I am not sure the members of the committee have copies of the handout.

Mr. Campbell: Sorry; it is being handed out now. There is a chart I would like to refer to, but I can come back to it in a minute.

Meeting the acid gas limit in the 1990s will be difficult and expensive, but we can do it. After Darlington, the amount of coal we use will likely rise again as electricity use grows, and this will be happening at about the same time the regulations get tougher, to drop to their strictest level. We have made a commitment to spend \$5 billion for acid gas controls in the 1990s, and this will be Hydro's share in the Canadian program. That will reduce depositions from 32 to 28 kilograms per hectare.

For some, cost is not critical, but for others--we are talking about our customers--an extra five per cent on the Hydro bill is tough. For some businesses trying to compete in the new international competitive economy, it can mean the difference between being competitive and not being competitive. On the other hand, we cannot let cost be an excuse for not doing the environmental job the public expects and requires of us.

I believe the public wants the problem solved, but none of us wants to waste money in the process. We are very willing to spend the necessary funds to do the job required of us and to meet the regulations. We are reluctant to make unproductive expenditures because it is not our money. Hydro does not have any money. By law, we are a nonprofit corporation.

Our profit this year will be in the order of \$250 million, but by law that goes back to our customers in the form of lower rates, lower borrowing, whatever. We do not have any money of our own. Everything we have comes out of the pockets of our customers. We are not reluctant to make these expenditures. You could say it is not any personal reluctance on the part of the Hydro corporation or the staff of Hydro, but we are concerned about keeping our rates competitive because we have a lot of letters.

I have files of letters from individual customers, members of the Legislature and from business people emphasizing the necessity for us to keep the rates as low as possible so they can keep their competitive position. We have a lot of industries, particularly in the north, which tell us they are not allowed to pass on price increases to customers. In fact, in some cases, there are price decreases, and when we put through a price increase, they have no choice about that. It is often the difference between being competitive and not being competitive. That is the reason we are concerned about costs.

If you look at the second page of the document I have distributed, there is a chart which shows the emissions. The dark line in the form of steps is the progressively tougher regulations that have been imposed on us by the government, and the thinner line on the left side of the chart dropping down shows what we have been achieving. We have been and plan to be below the regulations, bottoming out around 1992, after which, if we did not have the major expenditures we are talking about on emission controls--we are talking about a \$5-billion expenditure in the 1990s--the line would follow the dotted line and go back up again, and we would be back to a situation very much like the one we started with.

Our proposal is that we follow the heavy, dark line at the bottom right of the chart. The shaded area is the amount of emissions that will be eliminated as a result of the expenditure of \$5 billion.

Moving on, we have four objectives we would like to meet: to make large reductions in emissions; to ensure we will continue to do that; to supply a growing economy with power; and to do so at the lowest long-term cost. I do not want to minimize the difficulty of this task, but we have been doing it and we intend to continue doing it.

Others recognize the effort. In a recent speech, the Honourable Mr. Parasiuk, the Manitoba Minister of Energy and Mines, made a speech in Washington in February and he kindly sent us a copy. He had some interesting things to say. He was talking about the whole Canadian electrical industry, but he referred to the various provinces and said:

"Canadian coal-fired electricity contributes very little to the North American acid rain problem. However, the current Canadian acid rain abatement program calls for reductions in emissions of sulphur dioxide by 50 per cent by 1994," and that is our share of it which you see on the graph.

He refers to Ontario Hydro thus: "The principal coal-fired utility will meet this target at a cost of several billions of dollars."

Then he goes on to talk about the US situation. He said, "While environmental standards for new US coal-fired plants are equally tough, coal plants built before 1971 are substantially excluded from these regulations." That is what he is telling the Americans. That is in response to their complaints about what we were doing. He is pointing out to them that while their new plants require these regulations their old plants do not.

Indeed, out of a total US coal-fired capacity of about 300,000 megawatts, only 80,000 megawatts or 26 per cent are required to be scrubbed plants.

A recent report by the congressional research services of the US Library of Congress, entitled Canada's Acid Rain Control Program, Catching Up or Pulling Away, concluded. This is again Mr. Parasiuk quoting from this US report, "The sulphur dioxide reduction program: The Canadian program surpasses current US standards by requiring significant reductions by existing facilities." That is the situation we are in. The US is applying requirements on new facilities, but the major expenditures we are talking about are retrofitting controls on existing facilities.

In quoting this American report, Mr. Parasiuk makes the point that the Canadian program surpasses the current US standards by requiring reductions by existing facilities. Their own report goes on to say, "This is not surprising as the Canadian program is designed to control acid rain." I guess there is a little bit of sarcasm in there.

I think we have a pretty good story to tell, and I am thankful that our colleague from Manitoba, Mr. Parasiuk, is down in Washington telling our story as well. I do not want to minimize the difficulty of the task. We have been doing it and we continue to do it.

I move on now. We are saying we now have a very good electrical system in Ontario, but it is not a perfect one. We can plan to meet our objectives, but situations can arise that are outside our control. That is where the question of banking comes in, and you have heard about banking from a number of your witnesses.

Banking helps us to aim for lower levels of emissions, to do so at lower cost and to provide assurances as to what we will do in adverse circumstances. Without banking, we could not have assured the government or this committee that we will be able to meet some of the strictest limitations anywhere that we are now pledged to meet.

I believe most people who have appeared here recognize that things can happen that are outside anyone's control, and they differ on what to do about it. It is important to think through the problems that can arise and to identify what would be done if they were to develop. It is our duty to inform you whether the emission targets are realistically achievable. I would not want to sit here and show a chart like that if we were not convinced that we could do it. We are saying what we are doing is realistically achievable. I do not think you want us to tell you we can do something if we cannot do it.

We do not see an easy way out. I am afraid only hard choices are available when contingencies arise. Banking was the best approach we were able to devise so that situations outside our control would not put us in a position of inadvertently breaking the law.

I am sure you will want to seek other advice on this, but my understanding is there is little, if any, adverse environmental effect from this application of banking, particularly the way we propose to do it.

You have seen that we have achieved good results to date. We are not only meeting the limits, but we are surpassing them. Part of our control order requires us to work closely with the Ministry of the Environment over the next two years on the detailed regulations of how we will meet those emission limits in the late 1990s and in what circumstances the bank might have to be used.

Others have suggested our plan is to depend on the bank instead of putting in controls. I want to assure the committee that is not the case, that it does not figure in our planning. I would like to assure you that we intend to do no such thing. I cannot imagine the government approving any kind of plan that we would bring forward that would depend on massive withdrawal from the bank in order to meet our objectives.

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Banking is for emergency situations. It has been suggested that we might withdraw up to 500,000 tonnes virtually all at once or in a short period of time. That is not our intention. That most we can envisage needing is about 100,000 tons a year, and that is in a worst-case scenario, if we had plants that went down that were outside of our control.

I should emphasize to the committee that we are not planning to make any withdrawals from the bank. Our planning will be to meet the requirements without withdrawals. But without banking we would have to build in extra insurance to cover inadvertent circumstances, and this could add somewhere between \$500 million and \$1 billion to the \$5 billion that we are already going to be spending, and even then it would not be perfect insurance.

Ironically, this investment could result in scrubbers being put on units that are little used except for contingencies, and investment would not be well utilized. Just to compare, in the United States they are requiring these controls on new plants, not on old plants. We are retrofitting them on old plants, but if we were not allowed banking, we would also be faced with retrofitting old plants that we did not even plan to use but we had merely for standby purposes. We think that would be not a useful expenditure.

Keep in mind that they are not Hydro dollars we are spending. It is money from the public. It comes out of everybody's pockets, all the ratepayers' pockets, and so the money that is spent on that is money that is not available for other things. You may wish to consider whether some of that money would be better spent on some of society's other problems.

In summary, if we have flexibility--and that is what we are talking about here--we can save the people billions of dollars and still meet these requirements. If we do not have flexibility, we will have to spend up to extra billions of dollars more to achieve basically the same results. For one thing, if we did not have the kind of flexibility that this provided, the people who sell us power could arbitrarily raise the price of power.

For example, our colleagues from Quebec and Manitoba sell us power cheaper than they do the United States. Why do they do that? Because we have other lower-cost options, and they always set the price based not on their cost but on what your other options are. If we had no options, if our hands

were tied, we could end up facing very high prices comparable to the prices paid in the United States.

These are things we all have to keep in mind. We have some of the toughest regulations anywhere. Meeting them is going to be difficult and expensive, but we can do it, I assure you. We are prepared to look for better ways. We continue to hold discussions with the Ministry of the Environment on how to meet these new regulations effectively. We hope any changes your committee sees fit to recommend will recognize the tremendous financial and moral commitment and the effort Ontario Hydro is making and will make, and we hope the results of any recommendations will be workable and realistic. That is our opening position.

Mrs. Marland: Mr. Campbell, to start with the point you just finished with, are utility costs in the United States higher? Do customers in the US pay more for their electricity than we pay for our electricity?

Mr. Campbell: Yes. For example, if we compare just the border cities--Detroit and Niagara Falls, New York--we sell power at about half the cost of those cities. The farther away you go from the border the more expensive the power gets. If you go into New England or New York City, their costs for electricity are about three times ours.

Mrs. Marland: So in Ontario we are getting a bargain in having electricity at the price we are getting it at today.

Mr. Campbell: Yes, we think so. We think that is one of the main reasons the Ontario economy is doing well right now. It is one of the best-performing economies in the world, and most of the jobs in Canada are being created in Ontario. One of the reasons the auto plants are locating here is that they can have power at half the cost they could get across the river in Detroit. In fact, we have had American senators complaining that this is unfair competition, but we thought the Americans believed in competition.

Mrs. Marland: When you were here last time, we talked about asking the public if it was willing to pay more for its electricity. I have not been able to find it yet in the Hansard, but that afternoon I think we talked about 300,000 residential customers.

Mr. Campbell: That sounds right.

Mrs. Marland: When you gave the answer that it would be a five per cent increase, the way I interpreted it was that it was a five per cent increase to those 300,000 residential customers. What you are saying today sounds like it is a five per cent increase for everybody, including industrial.

Mr. Taborek: That would be everybody in the province.

Mr. Campbell: We would have to pass that on by law again and provide power at cost. That means we cannot provide power at more than cost or less than cost.

Mrs. Marland: This morning you said that without banking, you cannot achieve the controls.

Mr. Campbell: Without the banking, we could not be sitting here and giving you the assurances that we could come under those limits. The year 1990 is going to be tough. At the same time, I want to emphasize that our plans are

that we would not intend to withdraw from the bank unless it was something that was out of our control.

Mrs. Marland: You also said this morning there would be little adverse impact environmentally, "especially the way we are supposed to do it." That is how you said it this morning. I would like to know how you can say there would be little adverse impact environmentally if you had to use the bank, either with your credits or with forward averaging.

Mr. Taborek: I believe you heard testimony to the effect that monitors were set up around Inco in two successive years when it was shut down on strike and then reopened. In that period, a good part of a million tonnes was taken out and added. It is very close whether they were able to measure anything or not. If a million tonnes is barely detectable, 100,000 tonnes certainly is much less than that.

We have also thought through how much change in deposition or concentration might come from 100,000 tonnes. Our assessments were that they were swamped in all the other variations that were occurring in the atmosphere at any time. We would not want to pose ourselves as experts on that, because in a way we are biased, obviously. We refer you to the scientists in the ministry who basically have the responsibility for making that judgement. We proposed it to them and they advised us that they similarly felt there was not an environmental problem. The given in this scheme is that there is not an environmental problem that arises out of it.

Mr. Campbell: I can give you another example of where we have sworn testimony to that effect from so-called experts in that area, or at least technical people outside Ontario Hydro, in our hearings on our southwest transmission lines. One of the reasons we want to get that line out quickly is not only to save our ratepayers a lot of extra money--the delay is costing us \$8 million a month--but also it causes extra acid rain, acid gas. One of the lines we were proposing would have brought that power out 13 months earlier and eliminated 45,000 tonnes, it was estimated. It is now closer to 90,000 or 100,000 tonnes. It is the equivalent of a Bruce unit. It will be locked in and it will have to replace that power.

We had testimony from environmental people outside the ministry and Hydro at those hearings, saying that was not a significant impact.

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Mrs. Marland: If we use the example of when Inco was shut down, if we say that was hardly detectable, that it was not a significant amount and this is not a significant amount, we can do that all the way across the board until we find that none of them is a significant amount, yet we have a problem with acid rain. The point is if you are saying you would never want more than 100,000 tonnes, why do you not say, "If we have a banking provision, we will be willing to have an upper limit in that case"? From what you have said, I do not know that there is the evidence to say there would be little adverse impact. That is the concern I have.

When you referred to the cost, you said perhaps we have other societal problems that we could be spending the money on. There is always that argument, but do you not think the problem you are trying to wrestle with in dealing with acid rain deposition--and we are trying to deal with it on this committee--has a very real cost to society? No matter how small these little amounts are that contribute, if we find out ultimately that we are going to be dealing in the long run with human health, the societal cost may be very grave.

Mr. Campbell: We accept that proposition. We believe our commitment of a \$5-billion expenditure is a major recognition of that problem and will essentially meet some very tough requirements, so I would agree with you. We accept spending \$5 billion on that, keeping in mind that our emissions are only two per cent to four per cent of the emissions falling on Ontario. We will spend \$5 billion to reduce that and we agree with that. I have to say if we were forced to spend an additional \$1 billion on standby equipment that was not being used or was not planned to be used, I would categorize that as wasteful. I think that money would be better spent on other things. Even if you taxed us and spent it on children with learning disabilities, it would be better spent.

Mr. Epp: May I have a supplementary here?

Mrs. Marland: I do not want to hold the floor, because everyone has a lot of questions.

Mrs. Grier: We have four more Hydro speakers in an hour and a half. I hope we are going to get to the specifics of some of the comments that have been made by other witnesses. May we perhaps hear the rest of Hydro and then go on, or are we going to find we have spent most of the time with Mr. Campbell and have not heard the specifics?

Mr. Chairman: I was not sure that Hydro was going to have a speaking list as such.

Mr. Campbell: We do not have any other formal presentations, but we are here to answer any of your questions.

Mrs. Marland: I will ask my last question. You are talking about \$5 billion here, which is equivalent to five per cent on rates. When we asked you last time what it would cost to put scrubbers on everything, I thought you said there would be a five per cent increase on our rate. Does this \$5-billion program include abatement measures on everything?

Mr. Campbell: That is on 12 plants. That is the plan.

Mrs. Marland: This is on 12 coal plants out of how many?

Mr. Campbell: Twenty units.

Mrs. Marland: So there would be eight without?

Mr. Campbell: But we have a number of units that are mothballed and not used.

Mrs. Marland: Yes, I understand that.

Mr. Campbell: Those would be the 12 units we would be planning to use.

Mr. Epp: Picking up on something Mrs. Marland asked, to which you responded, Mr. Campbell, surely Mrs. Marland was not suggesting that you spend additional money on equipment that would be standing by, not having any meaningful function to perform. You said you did not want to spend an extra \$1 billion on equipment that would just be sitting around. I was not quite sure whether somebody misunderstood the question or somebody did not answer it properly, because I am sure Mrs. Marland was not saying, "Go ahead and spend

\$1 billion on equipment and have it sitting there." She was suggesting spending additional money on equipment that would be functional and would be reducing the amount of pollution.

Mr. Campbell: We are saying we intend to install abatement equipment on the plants we plan to use. I mentioned there are circumstances outside our control when we might have to bring on another plant on a temporary basis. That is where I am saying that if you install abatement equipment on a plant you did not even intend to use--right now, we are going twice as far as the Americans; that would be going three times as far as the Americans. We would be installing equipment on plants that were basically there for standby purposes only and we have no intention to use them to meet the targets.

Mr. Epp: Surely to goodness, you cannot expect anybody here to propose that we spend money on something we are not going to use.

Mr. Campbell: No, we are not proposing that.

Mr. Epp: And we are not proposing that; we are saying, what more can you do beyond what you are doing in areas where you are producing energy, not where you are not producing energy.

Mr. Campbell: The chart we showed you indicates we will more than meet the requirements put on us. Those are described as some of the toughest requirements--certainly they are the toughest in North America and perhaps in the world.

Mr. Epp: That is where we would like to be. We would like to be the leaders.

Mr. Campbell: We are doing that. We are committed to that. I do not think we are on different ground there.

Mr. Hill: May I try to answer the question that is coming from possibly more than one member of the committee?

If you could look at this chart for a moment, the bottom, black line, which Mr. Campbell has referred to, is our predicted line of emissions with flue gas desulphurization and 12 per cent sulphur coal. In reality, that line represents the numbers of kilowatt-hours that we predict will have to come from the coal-fired plant. That is rising to the year 2000, as I think I mentioned two weeks ago, to about 40 terawatt-hours of fossil energy.

Roughly, the Ontario electrical system towards the end of the 1990s will be supplied by something in excess of 50 per cent from nuclear sources, a little less than 25 per cent from hydraulic sources and about 25 per cent from fossil sources. Therefore, what Mr. Campbell was trying to explain in asking for the flexibility that we will need is, if the hydraulic or nuclear source or if the load growth is higher than the most probable predicted today, if there is any variation at all in the prediction of that line, the swing fuel, as we referred to it before, is coal. If we are going to produce the electricity in the province--that is caveat number one--as far as we see it today, it can come only from coal.

Normally, we would not exceed that line, but if other circumstances arise, the loss of a couple of nuclear units or increased load growth, if any of those kinds of occurrences happen, we have some choices but limited choices. We can try to buy more from Manitoba or Quebec or we would purchase,

as we have done in the past, from the Ohio Valley. We purchased from Indiana Public Service and from American Electric Power. I am sure all the members realize that if the option is to purchase from Ohio, we will get the acid gas the way things stand now, because that is where the majority of it comes from.

I hope that explanation helps.

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Mr. Taborek: To add to that, I think it would help to point out that we have some coal units that are used relatively frequently and others that are not used. They are basically there to respond if and when a problem arises. In essence, we are proposing a program that cleans up the units we use. If we now also had to guard against the emissions that come on the very rare occasions when the plants that are not used have to be brought back, we would also have to invest in that.

The point is, the investment would not be used because the plants are not used. They and that investment would be used only when something happens that requires the plant to come back. It is a little bit like the spare tire in your car. If you put it on your wheel, it is not a spare tire. It is a spare if you put it in your trunk and do not use it until an emergency arises.

The point of banking is that rather than spend--I do not know--somewhere between \$500 million and \$1 billion to invest in some device that is going to be used very rarely, it would seem preferable, if there were no environmental damage, to allow some kind of averaging, a payback, a warranty, a fee or whatever scheme to counter that situation. In essence, you make your investment when you need it. That is why, without banking, there is the risk one will not be able to accommodate it, and there is also the fact that one is going to be paying a great deal more.

Mr. G. I. Miller: How many units? Are there 25 units?

Mr. Walters: Yes.

Mr. G. I. Miller: Have you identified the ones to be on standby and the ones to be utilized?

Mr. Walters: To be able to meet this requirement here, we would need to fit scrubbers to the 500-megawatt units, the big ones. There are eight of those at Nanticoke and four at Lambton. Those are the basic workhorses we have.

Mr. G. I. Miller: They are the ones where you anticipate utilizing--

Mr. Walters: The scrubbers. The Lakeview ones are predicted to have quite a low capacity factor, to be used only under peak conditions or in emergencies.

Mr. G. I. Miller: You have one scrubber there now?

Mr. Walters: We have an experimental scrubber that you saw at Lakeview. That scrubber is the type that reduces the emissions by something like 50 per cent. The scrubbers we are talking about for the 500-megawatt units would reduce the emissions by 90 per cent or more.

Mr. G. I. Miller: How much have you got invested in that one?

Mr. Walters: Down at Lakeview right now? I think we have invested about \$6 million or somewhere in that region.

Mr. G. I. Miller: About \$6 million and it is going to work?

Mr. Walters: It is research and development. It is an experiment; we are doing something there which is ahead of anything that is going on in the world.

Mr. G. I. Miller: That is not a waste of \$500 million.

Mr. Walters: No, but the eventual cost of installing a system like that to make it work properly will be quite a deal higher than that. We are estimating something like \$50 million per unit, because it needs new--

Interjections.

Mr. Epp: I may be the only one here who is getting lost with all this, to be quite honest. Either we are talking about apples and apples or about oranges and oranges. Mr. Campbell said we are spending an extra billion dollars and wasting that. I understand this gentleman--I did not get your name.

Mr. Taborek: Ron Taborek.

Mr. Epp: You tried to explain that with the spare tire analogy, and I understand that, but then we were talking about Nanticoke and Lakeview. They are not plants in mothballs.

Mr. Campbell: We are going to fit scrubbers on Nanticoke.

Mr. Epp: And when we are talking about spending extra money to try to reduce pollution, we are not talking about wasting money.

Mr. Campbell: Our plans are to install scrubbers on Nanticoke and Lambton. Those will be the plants carrying the load.

Mr. Epp: But you are not going to be doing as much as what is being proposed here with this chart?

Mr. Campbell: That is what we are doing. The chart shows what we are committed to.

Mr. Epp: The reason this line is down here is because of the spare tire analogy?

Mr. Campbell: No. The reason the line is down there is because of the \$5 billion we are spending on those 12 plants.

Mr. Taborek: To go back--

Mr. Campbell: The \$1 billion we talked about was dealing with a suggestion that we not be allowed any kind of flexibility of banking in the process.

Mr. Epp: Would expending an extra \$1 billion give you your flexibility or take away your flexibility? I think you are saying it would take away your flexibility.

Mr. Campbell: It would take away our flexibility.

Mr. Epp: How does spending \$1 billion take away your flexibility? I would think you would buy flexibility by it.

Mr. Chairman: Mr. Epp, I wonder if Mr. Charlton might ask a supplementary, and then Mr. South.

Mr. Charlton: I was extremely bothered by that recent exchange because already we are getting messages. We are talking about the spare tire analogy and using it only in emergency, and we are talking about what causes the emergency, and you gave us two examples. One was the loss of two nuclear units, and the other one was load growth above the expected load growth. They are two totally different situations. One is an emergency, and the other is part of a planning process.

If you are telling us you are going to use the banking to cover both, that is where part of the problem lies. If you are telling us you are going to start to use your banking provisions to cover load growth beyond your present expectations, then you are not covering emergency situations, and we are not talking about 100,000 tonnes.

Mr. Hill: There are probably at least half a dozen scenarios that one could postulate quite realistically that demand more production from the fossil plants. Some of them can arise in the planning time horizon, and we have discussed this before in front of the previous select committee. The planning time horizon, depending on what one is considering, is somewhere between eight years and 14 years, as it seems to be today, so there are the uncertainties in the planning horizons to which I also referred in my previous appearance before this committee.

I made reference twice to the fact that the real uncertainty is in making the predictions. As the chairman, Mr. Campbell, has said this afternoon, we do not want to sit here in front of this committee and make commitments today knowing full well that all the predictions we have are highly uncertain. Really what we are talking about in banking is flexibility to cover the uncertainties in the planning horizon and the uncertainties in the operating time frame, which is one year to one and a half years.

Mr. Charlton: But you are not addressing yourself to the question. Mr. Campbell is talking about not wanting to put technology on units that are not going to be used. You are talking about using banking to cover load growth that is beyond your expectation.

Surely if you have load growth beyond your expectation, and therefore the real expectation arises that you are going to have to use coal units that you are not now expecting to use except in emergency situations, you scrub those units at that point or whichever technology you choose to use because you are then going to be using them on a regular basis. They are not going to be part of what we are talking about here. We are getting mixed messages in terms of what you are saying.

Mr. Hill: If we recognize it in time.

Mr. Campbell: There is no question that we would not plan to use coal units for production purposes--that is, if the load growth occurred--without retrofitting scrubbers. We think that day has passed. For example, we have the Hearn station sitting in Toronto. It is a coal plant, and it has been

mothballed. It is an old plant, and it is an inefficient plant. We keep that there because in an emergency that could keep the lights on in Toronto, and there is some value in that, but it would not be a clean plant. If we were to consider using that plant for production purposes, we realize that we would have to retrofit that with scrubbers or some new technology. We realize that, but we do not plan to do that right now because we do not think that plant is going to be needed. Nevertheless, it is insurance to have it there.

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I have been at committees where Hydro has on occasion been mildly criticized for overbuilding plants, having too many plants, and now we are saying we should not only have these plants we are not using but we should fit scrubbers on them just in case. We are saying all right, if the load growth were to change suddenly and we were to go to three and a half or four per cent growth consistently over a period of years, we would recognize that we would perhaps have to use more coal, we would have to buy from Quebec or we would have to do something else. Acting in good faith, the plan we have laid out here is our best estimate of what the future holds and our commitment to meet those kinds of requirements.

If the world changed and we had very rapid economic growth, we would start as fast as we could to retrofit equipment to these plants if that was what the decision was at the time, but there might be a lag in it. It might take a year or two to get something fitted on to those plants. But we do not believe we should go ahead and commit these expenditures with the best expectation that they are not going to be used. We think that would be wasting money.

Mr. Holt: I wonder if I can make one point here that seems to be missed in this. If you look at the regulation line here, and we have drawn the line that shows what we expect to do right on meeting the regulation, I could accept some of the arguments that have been made, but we have deliberately lowered this line below the limits, and we have spent money to do that. We have lowered the sulphur content of the coals we buy to give us this cushion of 20 per cent or so because we recognize that these sorts of changes in plants will happen. They happen to everybody's plants.

We would normally be able to take care of most of the changes that we could expect because we have deliberately undershot the emission levels, and we have spent considerable money to lower the sulphur levels below where we would need to just to meet the emissions. However, in addition to most of the things you could plan on having to deal with if things go wrong, you can also get emergency situations. All we are saying is, Murphy's law could happen. We could have a number of low forecasts go up in number and then lose nuclear units, and we could suddenly get a peak in this thing. It would be outside our control. But we have not minimized our expenditures just to meet the regulations. This graph clearly shows Hydro has tried to go at well below the regulation to allow us to deal with contingency and emergency situations and that has not been done without a cost.

Mr. Campbell: Just on that, we are spending in excess of \$100 million a year right now to reduce the sulphur content of coal so that we can meet that regulation, and we could do more of that. For example, if we had the kind of growth you are talking about here and we had to bring back some of these plants, we would have some pretty good chances to minimize that as well because if it happened at the right time of year we could pay additional premiums, bring in more low-sulphur coal and lower the emissions in that way.

There are some circumstances where in the middle of the winter, when the shipping season is frozen up for a few months, we could get caught out.

Those are the kinds of exigencies that we can see, but we do not think it is good business to build for that. You can do it, but you are certainly going to be starting to penalize Ontario's competitive position if you start doing that kind of thing.

Mr. Charlton: I think the very simple point, though, is to get the message absolutely clear in terms of what the intent is because it was not clear in terms of the exchange that went on.

Mr. Campbell: I appreciate that, and I thank you for that, but I think the chart shows that, and that is a commitment.

Mr. Chairman: Mr. South.

Mr. Epp: I had one more question, Mr. Chairman, but if there is not time--

Mr. Chairman: I might come back to you later; we have a long list.

Mr. South: Do we have some more speakers from Hydro? If we have, I will stand down my questions.

Mr. Chairman: Mr. South, perhaps you would proceed with your questions.

Mr. South: Have you had an opportunity to read the presentation by Professor Dewees?

Mr. Campbell: I saw something. Was that yesterday?

Mr. Taborek: No, we have not had a chance to read it. I saw a quick summary; that is all.

Mr. South: It is intriguing. I recommend it.

Mr. Campbell: Which one was that?

Mr. South: It is exhibit 33. You can get it from the clerk.

Mr. Campbell: Oh, yes; the trading.

Mr. South: Right.

Mr. Campbell: The stock market in pollution.

Mr. South: The marketing board in pollution.

Mr. Campbell: Pollution marketing board.

Mr. South: It introduces an interesting concept. One of the points he makes--and I think it is very good--is that the public perception and certainly the US perception with regard to banking, say what you will, is that in essence it is a loophole; it makes Ontario's case less credible. I think there is a lot of merit in that statement.

Then there is the concept of trading emission rights. If in truth Hydro does have some plants that go down at some point and it gets into an emergency situation, it may well be that one of the other big producers has some surplus SO₂ capacity that Hydro could use. So there is the possibility of trading.

The other thing is if Ontario Hydro wants to use them, make it pay for those deposits in the bank with a sizeable amount of money, an amount of money that is equivalent to the cost of putting in the technology and the equipment to remove it.

All these things push all of us, and mostly the consumer, towards conservation. It is easy to imagine that you need another fur coat if you have \$100,000 in the bank. If you know you do not have that in the bank, you can likely get along without it. This is one of the problems we face. The very thing that has made Ontario great is also a problem in that we have low-cost electrical rates. It is also a problem in that we are dealing with nuclear energy, about which a lot of us have some reservations, maybe if not in the very short term, in the long term. The fossil-fired plants give us some ongoing pollution.

I have listened to these people who have a biological background. You cannot just talk about the total sulphur dioxide deposited in one year and say that therefore banking makes sense. If you have a big emission in the wintertime when the snow cover is there, and that acid accumulates in the snow, it goes out with the snow melt in the springtime. For all the little fish in the lakes, it comes at a very sensitive time in their lives. You wipe out a generation of fish.

With regard to the forests--and I appreciate that there is no great substantiation of this yet--if you knock back the buds on a great number of trees at a critical time because you have put a great amount of sulphur dioxide in the air, and if you do that for a couple of years, again you are wiping out some trees. As we are finding out with gypsy moths, a tree might stand some defoliation. You might get by with one year, but do it for the second year and you are in trouble. It is not just the accumulation of sulphur dioxide over a year; if you peak at the wrong time, you can put some real stress on nature.

As I say, you would do well to read that article by Professor Dewees. You have to approach it with some reservations, as I am sure you will. Banking weakens Ontario's credibility in what it is doing. Think of that. Professor Dewees has introduced some interesting concepts and you would do well to think about it. Maybe I am making a statement more than asking a question.

Mr. Chairman: It would not be the first time that has happened.

Mrs. Grier: We have not had the minister. It is nice to have his parliamentary assistant's statement. So I would not want to interrupt.

Mr. South: I guess that is what I wanted to say. Read that; it is very good.

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Mr. Taborek: You made three points. First, if there is an environmental concern about banking, it would occur in the spring. That is indeed correct. The assessment that was done was whether there would be a spring problem and the judgement was that there would not, because the amount

quite literally would be undetectable. The differences would not be detectable. I think that would be best answered by the ministry and its environmental scientists, but I really want to get on the table that we recognize that the spring was critical. That is what we had to watch out for and we did.

Second, you commented about the different schemes, warrants and markets; we did look at all those. The scheme of trading where one could pay for emission reductions at other companies is one we have studied very highly. Personally, I think it is the most economically efficient way of doing things. I believe, though, that there are perceptual problems in it that would prevent it being utilized.

I was really pleased to see that the various people from the University of Toronto made the point that a given environmental objective can be achieved with quite a wide range of regulatory mechanisms. Some of them will be very expensive, others will be economical. Some will be perceptually simple, others will be sophisticated and perceptually difficult. Regrettably, the most economic ones are the most sophisticated and perceptually difficult.

In looking through that set, we thought the best was banking. That is why we argued for it. It is fairly straightforward, fairly effective. It is not as good economically as it might be; it is not as simply perceptual as it might be.

On the question of perception and its impact in the US, I think it is important to do more than just talk about Americans and about the fact that there are some Americans who are leading Canada in their environmental controls. I mention the state of Michigan as one. I have mentioned the Tennessee Valley Authority as another that has made big strides, well in advance of Canada, in reducing emissions.

You heard today of researchers advising congressmen in the Congress of the United States that Canada's program is far superior to the US program. There are a good number of Americans who are willing to deal with emission problems and look at them critically. Their problem, in addition to the degree they can go, is economic. Money is going to limit how far people can go.

There is another body of Americans whom the economic penalty is going to bite the hardest and they are fighting the hardest. I submit to you there is no statement or position we could arrive at that would swing them to a point where they would say, "Yes, Canada is doing fine." They are committed to fight to the last straw and we cannot persuade them. If we remove one perception, they will find another.

Our point is that in addition to doing the best we can on the perception, we have to make sure we are not crippling our economy to try to deal with perceptions in hard-core polluters in the US. That is a losing game.

Mr. Campbell: There is just one point I would like to make.

In comparison with the United States, we get an unfair rap on the banking issue. We would be quite happy to live with their regulations. We say any new coal plant would be fully scrubbed. We expect if we ever built another coal plant, that is what it would be, and we accept that. All this \$5 billion we are talking about is retrofitting, which they are refusing to do. The Ohio plants are not even considering retrofitting scrubbers to their coal plants as we are doing. What we are talking about in banking is for those coal plants

that we do not even intend to use. That is where the banking comes in. We have already gone several steps beyond the Americans and I think we get a bum rap if they start accusing us of something on banking, because they are not even scrubbing the existing Ohio Valley plant. They are refusing even to consider it. President Reagan says, "We are not going to do it."

Mr. South: Rather than banking, is there any other possibility? Is there much surplus capacity available in Quebec or Manitoba? You need a blanket for all the exigencies that none of us can say with certainty will occur. Can we make a deal with Quebec or Manitoba to supply us with this amount?

Mr. Campbell: Yes. We were hoping to buy a block of power from Manitoba and one from Quebec. That is in our plan. For example, when we have had problems in the past, strikes and so forth, we have been able to buy fairly large blocks of power from both Manitoba and Quebec. That is factored into our system now.

Mr. South: I appreciate that if you were asking them to block a certain amount off, you would have to pay some kind of a standby amount.

Mr. Campbell: We did this winter; we paid them \$9.5 million for 1,200 megawatts for standby.

Mr. South: When you work out a deal like that, do you pay for what you get only or do you pay for what you think you might need?

Mr. Campbell: We paid them \$9 million for the standby to have it available and then we paid also for the energy we actually used.

Mr. South: I see.

Mr. Campbell: We will have a report on how much we actually used at the end of the year.

Mr. G. I. Miller: If you put that \$9 million on a standby, could that amount not be deducted from your overall cost of putting on scrubbers? You say you put \$6 million on experimentals on the one at Lakeview, that \$9 million would have put on a scrubber on another and you would have your own standby right there. Would it not?

Mr. Campbell: The quantities are different. This was a very large block of power.

Mr. G. I. Miller: I recognize that.

Mr. Campbell: It was 1,200 megawatts of power.

Mr. G. I. Miller: That is three units at Nanticoke.

Mr. Campbell: Yes, but for those Nanticoke units, each unit will cost at least \$500 million.

Mr. Walters: May I add that the purchase from Hydro Québec was used instead of starting up the Lennox plant, which is currently mothballed.

Mrs. Grier: Mr. Campbell, you just made a very eloquent argument that it would have been much cheaper all around if you had been forced to put controls on those coal-fired plants when you first built them.

Mr. Campbell: I do not think they were in existence when those plants were built.

Mrs. Grier: Nobody was thinking of it then.

Mr. Campbell: I do not think the technology was there; the technology is fairly recent. By the way, it is quite a Rube Goldberg kind of technology. For example, we had one estimate that fitting our scrubbers on one of our plants would mean 200 trucks a day trucking sludge out of the plant, 200 a day going through people's communities.

Mrs. Grier: In my community, we would rather have the trucks than the acid rain.

Mr. Campbell: We are going into this; we are spending \$7.7 million on environmental assessments on these things. That is the kind of discussion we are going to have at the local level, because when the local people find out the effects on the local community of some of these things, there are going to be some other questions as well. I am just saying that we have our work cut out for us. We are going to do it, but--

Mrs. Grier: I am sure you will point out every detailed effect to them so that they will know what to argue about.

Mr. Hill: Mrs. Grier, the facts will confirm that we were among the first in the world that fed high efficiency electrostatic precipitators through our plants and the future will confirm that we are among the first in the world to retrofit scrubbers to our plants.

Mrs. Grier: I am sorry; I did not mean to sidetrack, but let me just get back to what I am getting confused about. Can you give me the first date at which you expect to have this technology retrofitted on a coal-fired plant? What is your in-service date?

Mr. Campbell: It is 1994.

Mrs. Grier: Yet your increased use of coal begins after 1990.

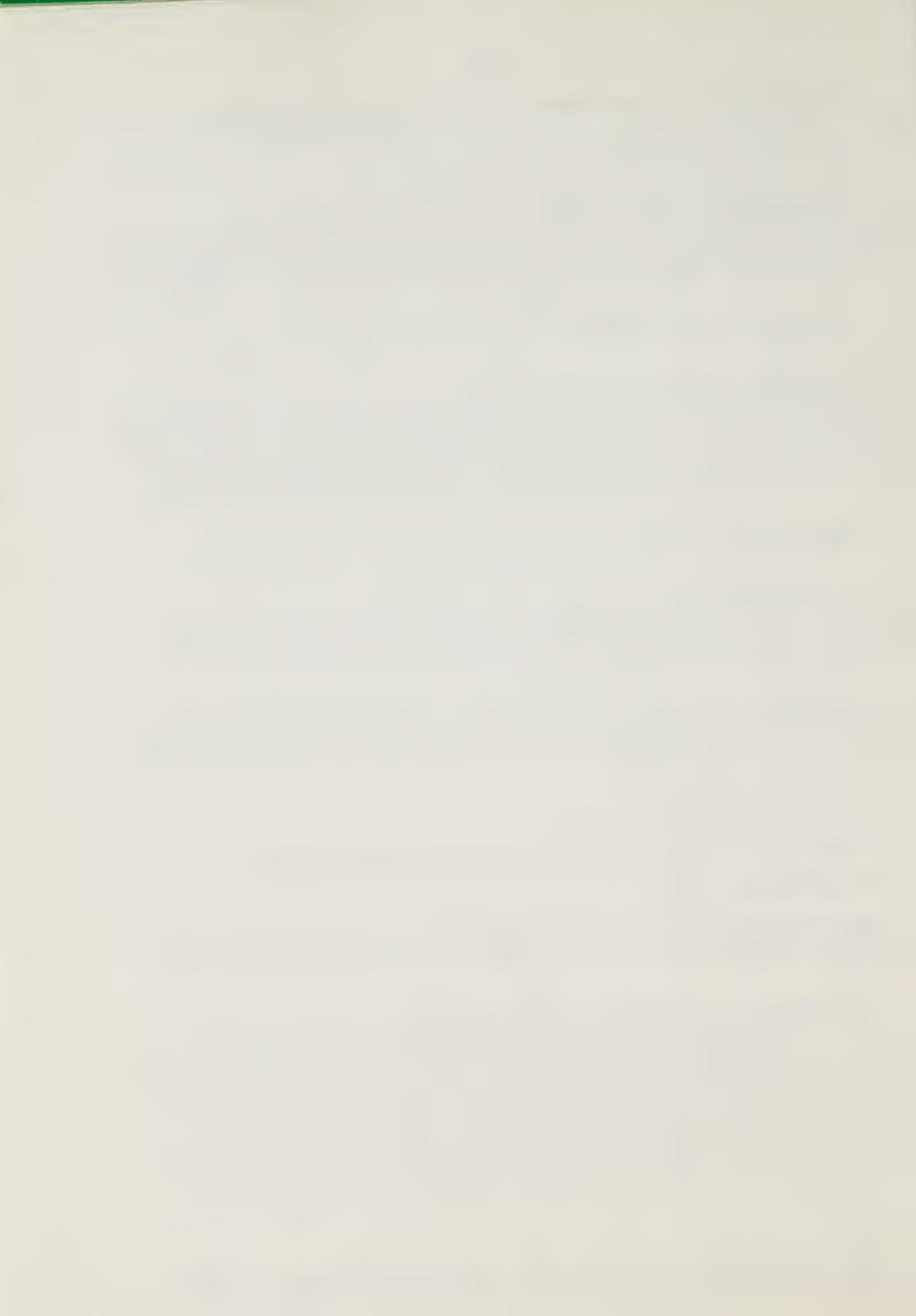
Mr. Campbell: In 1992.

Mrs. Grier: What would it take to close that gap and make sure when you started to increase your use of the coal-fired plants you would have the technology on them?

Mr. Taborek: The timetable from here to 1994 is that we are now in the process of preparing materials for an environmental assessment--that is the \$7.7 million we advised--which we will submit to the government in January 1988. We are anticipating a forecasting of a one and a half year government consideration and approval process and we trust that we will obtain approvals in the middle of 1989. From there, we forecast a four-year construction program to put the scrubbers in place. We have actually called for them for February 1 and April 1, 1994. We have recently amended our business plans to try to get them in late in 1993. There is some question we can do that.

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Those are the three steps: for us to prepare the arguments; for the government to accept they are environmentally approvable; and for us to



construct. There is one other factor. There are decision points there; that is, western Canadian coal may prove to be a cheaper option and we may use that in lieu of some or all the scrubbers, for instance.

Mrs. Grier: In other words, some of the technologies you will be submitting, the alternative technologies, could have earlier in-service dates than others?

Mr. Taborek: Some could.

Mrs. Grier: Will all that be clearly laid out in your submission due at the end of 1988?

Mr. Taborek: Yes, with one proviso. What I have described is the decision process to the first pair of scrubbers, and then we enter into a sequential decision process year after year. We are not in a position where we make one decision that applies for 20 years, etc. We do it sequentially. In 1988, we will describe all the decisions in 1988 and our best view of the future, excepting only that as the year passes things may change and a slightly different view may come in 1989 or subsequently as the world changes and we adapt to meet it.

Every year we produce exactly one of those. We have one right now, as a matter of fact. It is our 1986 bulk electricity system resource plan wherein we basically lay out the coal sulphur levels, the number of scrubbers, the amount of generation. We do this every year, and we are doing it specially for 1988 but we will do it again in 1989, 1990, 1991, etc.

Mrs. Grier: What is the sequence by which you anticipate installation of this retrofit technology? In the costs you have given us, which end up at \$5 billion, you say two scrubbers in service 1994, two in 1995, etc. What is the order of installation there and which plants are you looking at?

Mr. Taborek: Part of this comes out of the work we are doing now, but my best guess at the moment is the first two will go to Lambton, and--was it planned the second two would go to Nanticoke?

Mr. Walters: The second two to Nanticoke.

Mr. Taborek: That is in the nature of a proposition that has to be tested through this process.

Mrs. Grier: Where does Lakeview come in?

Mr. Taborek: We would likely go through the 12 large 500-megawatt units before we started on the Lakeview units.

Mr. Campbell: Our plan, Mrs. Grier--it may be good news for your area, I hope, for a period anyway--is that by the 1990s, the Lakeview plant will be cut back. Basically, it will not be operating in the summer. Our plan calls for it to be shut down in the spring, summer and fall and operating only at peak periods in the coldest part of the year. It will be down to operating at 10 per cent, which in effect is as good as a scrubber. In other words, the best way to scrub coal is not to burn it in the first place, which is our basic plan for Lakeview.

Mrs. Marland: It is 10 per cent now.

Mrs. Grier: It is 10 per cent now.

Mr. Campbell: That is correct. It is 10 per cent now, and it is dropping to a few per cent by 1990.

Mrs. Grier: What you are saying is the limestone injection process that you are looking at there and which is proving to be successful may be installed but may not be used?

Mr. Campbell: We are using that as a pilot plant. It could be installed on other units.

Mrs. Grier: Having installed it there, why would you not use it?

Mr. Campbell: That is not a production unit.

Mr. Taborek: Because the plant is not burning coal, it is not generating electricity.

Mrs. Grier: However, that is your decision not to have it generating electricity?

Mr. Taborek: No. It is the public's decision not to require electricity.

Mr. Epp: Just a moment now. Pardon me, Mrs. Grier.

Mrs. Grier: That is a good question. We have often wondered about Hydro.

Mr. Epp: Nine million people out there are not making the decision that you should close that plant. You make the decision on priorities. Somebody else makes a decision on how power much they are going to use.

Mr. Campbell: Our priority is that we use our least expensive plants. Our least expensive are hydraulic and nuclear. We use those and then we use the coal, and we use the most efficient coal plants, which are Lambton and Nanticoke.

Mr. Epp: But there was not a referendum out there for the public to decide what it should use and what it should not use. You people perceive what the public wants and then you decide--

Mr. Campbell: The public decides on its use by turning its switches, and because this Legislature has established that we shall provide power at cost, we provide power at the lowest possible cost, and so we use the cheapest plants we have. That is our method of operation; so it is kind of automatic.

The point here is we would not use an expensive plant like Lakeview if we had cheaper plants sitting idle. Those are the ones we use first, and that is where we put the scrubbers in first.

Mr. Epp: I understand that, but all I am saying is the public did not, through a referendum or in any other way, say you should not use that plant or whatever. You people make the decisions based on the need out there.

Mr. Campbell: We make the decisions, that is right, but our decision-making is very open and public in the sense that it is clear we would

use the cheapest-cost option first. Every utility does that. That is one of the things every utility does.

Mr. Epp: I just want to make sure we are hearing the same message.

Mrs. Grier: In some of the response to your interim report, the Minister of the Environment (Mr. Bradley) mentioned the use of natural gas and questioned what consideration you had given to substituting natural gas for coal. I gather you have not commented back to them on that. Could you perhaps give us some comment today?

Mr. Campbell: Yes. We have talked a lot to the Ministry of Energy on that question and the problem with natural gas. We have considered it and we have also considered reopening our Lennox plant with oil. I think you will remember I said to another committee that we will be reopening the Lennox plant at Kingston, burning oil, and the question is of time. It will probably be around 1990. We would want to have a need for that plant because there are people involved.

We do not want to move a bunch of people down there for a few months and then have to move them away again. We would want to wait until the economic conditions were right so that the plant was going to be needed for a prolonged period and then open it. We think the economics of that are going to be right around 1990. Again, the oil we burn will be clean, and that is another way of producing power without the sulphur dioxide emissions.

Natural gas is another option. The concern about natural gas is the supply in the winter. I understand the pipeline is full now. While we do have natural gas in at our Hearn plant and there is a pipeline near Lennox, we understand there is not capacity in the winter to provide gas to that plant; so oil would be the best option, but we keep evaluating these options all the time. When the oil prices dropped, we really got quite interested in burning oil again at Lennox, but they have gone up again. We do an evaluation on the cost of fuels almost on a month-by-month basis.

Mrs. Grier: Will your submission at the end of 1988 include as one of the options the use of natural gas, and do you envisage your submission giving the pros and cons of all the various options?

Mr. Campbell: Yes, we will be examining that. I should say that natural gas sounds good, but there is one problem with natural gas. It burns with a hot flame and actually produces more nitric oxide than the other forms of fossil fuels. There is increasing evidence, as I am sure you have heard, that nitric oxide is increasingly being seen as one of the main problems in Europe that is killing the Black Forest and Scandinavian forests. That occurs when there is combustion at high temperatures. One of the ways you reduce nitric oxide is to have a lower-temperature combustion.

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Those are the kinds of problems we would be looking at, but I do not think there would be much gain to reduce sulphur dioxide and increase nitric oxide. It is not a very good tradeoff. As I say, the British are convinced from studies they have done that nitric oxide is a worse problem than sulphur dioxide. I am not an expert in that, but I am just saying it is not a simple problem.

Mrs. Grier: In the \$5-billion cost estimate you have provided us

with, as to the cost of installing technology, what assumptions have you made or upon what kinds of technology is that based?

Mr. Taborek: We took the standard wet limestone scrubber that is widely used in North America at present. It has efficiencies of removal in the range of 90 per cent. We basically calculated the cost of the stream of those that began coming into service in 1994--and I believe they were installed at the rate of two per year on our 12 500-megawatt plants; I think maybe one year excepting--and we basically computed the capital interest operating costs of that program. It has associated with it, but not costed, the fact that any unit without scrubbers would have lower sulphur coals so that they also were suitably equipped. Those are the assumptions.

Mrs. Grier: Is that likely to be the most expensive option available to you, or where does it fit with the other options of abatement technology?

Mr. Taborek: It is what is available right now and it is the most economic one we see right now. If I had to describe the future now, as you asked me to, that is the future I would describe. I do not like that future. I would like to find better ways than that.

Mrs. Grier: So the \$5 billion is very much a worst-case scenario and presumes that there will be no improvement or alternative technologies discovered between now and the year 2005?

Mr. Holt: I would like to answer that, Mrs. Grier. We are dwelling very much on one option in this discussion, which is the scrubber option. I think the reason that has been the one that has been costed is that at this point it is the only one that we really know will do the job.

However, there is a kind of national initiative with the federal government, the western provincial governments and the Ontario government now to see whether the job can be at least partially done by using western Canadian coal. It has a number of benefits over scrubbers. It does not have the sludge and waste problems and it creates jobs in western Canada, but there are some uncertainties, as we have stated before. Our plants in the present configuration have difficulty in handling that coal without blending it.

There is work going on in western Canada to upgrade its coals, there is work going on to close the economic gap because of the delivery costs of western Canadian coals, and there is work going on in Hydro to see what would have to be done to some of these plants to burn western Canadian coal or coals with very low sulphur contents. I think most people believe that out of that will come part of the solution. What that will do is reduce the number of scrubbers that have to be added and have other units using lower-sulphur coals and perhaps a better solution. We cannot hang our hopes on that now because the technical and economic problems have not been solved.

As we move forward, we are moving forward on the basis of scrubbers, but it could be that some of those 12 scrubbers could be dropped off and other solutions that are environmentally better and certainly more cost-effective and from a national point of view have other benefits would substitute in the program. We are trying to move ahead keeping all our options open. That is one of the reasons that I do not believe it would be useful to rush into scrubbers at this time. We cannot say to the people in western Canada, "If you close the economic gap and make coals available to us at an economic cost, then we will consider them," if we have already committed ourselves to put scrubbers on all the units that are not needed. I think there are two--

Mrs. Grier: You do not necessarily disagree then with the federal-provincial task force's estimates of the cost of reducing your flue gas emissions using desulphurization and western coal? The total cost it predicted was considerably less than the \$5 billion you are now showing us.

Mr. Taborek: If I may, they computed costs in one way that gave a lower dollar number, but if you recall, they have a higher impact on rates. I think that is just a difference in how you are discounting the costs. It accounts for the dollar difference.

If I recall, that task force actually said there would be an eight per cent rate impact by its calculations if we used scrubbers, and I think it said a 16 per cent rate impact--or did they say it would be double that--if we used western Canadian coal.

Mrs. Grier: I do not know what the task force said about rates.

Mr. Taborek: We have actually come to a number, where apples are made equal to apples, that is lower than that task force suggested, I believe.

Mr. Campbell: There is another thing to keep in mind on the cost of western coal. You mentioned that the scrubbers we are planning here are the worst-case scenario. We do not think so. We think that is what we can do. We do not like to kid people. We like to say, "This is what we know we can do." While we have said there is room for the western Canadian coal people and the railways to sharpen their pencils and make their costs more competitive, it would be very surprising if they came in at lower costs than that.

Right now, the 30 per cent of coal we are buying from them, we are paying a \$70-million premium for that coal. If they could get it down to being competitive, that would be quite an achievement, but I do not think we are looking for much lower cost options. That might be a better option; I do not dispute that. It might be a better option if we could get a good price on western coal. It is cleaner and we could burn that rather than putting in the scrubbers. It might be a better option, but I do not think we can count on it being cheaper.

We do not want to kid anybody. Our cost is based on what we can do now. Right now, western coal would be much more expensive than that. They might be able to bring it down to be competitive. If so, God bless. We hope they can.

Mrs. Grier: Finally, I would like to ask a couple of questions about the banking. I commented the first time you appeared that you had not mentioned the banking in your presentation. We have had a lot of discussion since that presentation. One of the things we have discussed since is forward averaging. In your presentation today, you do not mention forward averaging. Can you explain to me how you see the forward averaging working?

Mr. Campbell: I think I will ask Ron Taborek to do that.

Mr. Taborek: Put yourself in 1996, in the future that is described here. We would have put ourselves into roughly 190,000 tonnes of emissions. We are down a little below the regulation. Probably by that time, we would have nothing in the bank.

Mrs. Grier: Why?

Mr. Taborek: The reason being that when something has been in the bank for five years, it disappears.

Mrs. Grier: But it rolls on.

Mr. Taborek: Yes. If you look at this, the difference here is what might be in the bank. What is here is disappearing every five years. When you get to here, there is little if anything that could go in, this difference in here. We are going to be very close to the limit, so there is not likely to be much in the bank. That is where we are.

Mrs. Grier: What year are you looking at, 1996?

Mr. Taborek: I picked 1996 as an example.

Mrs. Grier: You have a heck of a lot in the bank in 1991 and 1992.

Mr. Taborek: Bear in mind this is a forecast, a scenario, and the world is changing.

Mr. Campbell: It also drops off after five years.

Mr. Taborek: It is dropping off. There are a lot of contingencies through here that we still have to deal with.

Take a proposition that we are in a situation with nothing in the bank. Now we have some kind of problem. Say two nuclear units go down, another Pickering 1 and 2 kind of thing or whatever. We then turn to look at what we can do in the circumstance. We will have coal plants available because we have coal plants that have not been doing anything except standing by for contingencies. However, we could not use them a great deal, because they would not have had an investment in technology--unless we feel that is the way to go, but we are looking at banking.

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What we would do in that instance is we would turn to Quebec and Manitoba to purchase. There are limits to how much they could sell to us based on transmission and, of course, how much they have available in the circumstance, and they would charge us a good deal. I will explain that later.

We then look around to see if that would do the job. If it would not, we would turn around and purchase from the United States, most likely the Ohio Valley, and we would pay a great deal there, assuming it was available. The alternatives to doing that: One, it just may not be available; so we will have to use our coal plants. The bank would then be used. We would turn to the bank and say: "There is not enough available from surrounding utilities. We therefore have to use our coal plants." They would not have had the prior investment. Therefore, we would draw down the bank for the 50 tonnes or 1,000 tonnes or whatever is remaining.

Having done that, you see a list of other less savoury alternatives, which I would just as soon not go into at the moment. The point is that we would have to draw down the bank, and then we would have to pay back the bank. People have said that being in a difficult situation, it may be difficult to pay back. That is why there is a fairly long time, because we might, for instance, have to say: "Those plants are being used. Now is the time to make the investment and clean them up." It would take us, say, four years for the construction period to put a pair of scrubbers on them and three, four, five or however many years in effect to run those scrubbers to do more than we had anticipated doing to pay back the circumstance.

It is based on the presumption that there could be a time--there likely will be times, and most of the 1990s will be like that--when there is very little there, and we still have these contingencies to deal with. When you hit a contingency, you get a set of very hard choices to make. We thought the bank was one of the best choices to have established.

Mr. Campbell: Again, I want to emphasize that our plan is not to do that. Our plan is to meet the needs.

Mrs. Grier: I know that. You have said that over and over again.

Mr. Campbell: Okay, but if we did not have that, we could be in a position where we could not run our plants and we would have to buy from Ohio, which would be running unscrubbed plants, and we would get a large amount of their acid drifting here. That is the kind of position we could put ourselves in. It would be like trying to operate with handcuffs on.

Mr. Taborek: They would make windfall profits as well. They could charge us whatever they wanted, and we would have to pay.

Mrs. Grier: That is one of the contradictions I am having difficulty reconciling. If you are not planning to use the bank and if you foresee the bank as being there only to meet an unforeseen contingency, how do you reconcile that with the kind of process you have described to us that would enable you to get access to that bank? You have got to submit to the minister details of what you want and how long you want it for. It is obviously not going to be a decision that is made like that and there is going to be some public discussion of it. Resolve that contradiction for me. If the pressure tube is gone or Bruce has melted down or something, you are going to need it immediately.

Mr. Campbell: We would need it immediately, but we have some emission limits which would give us a period of time. In other words, these are annual limits. If it happened early in the year, we would have a number of months to make plans and we could do other things. We could buy from Quebec. We could buy low-sulphur coal. If the shipping season were on, we could do different things. We could buy low-sulphur US coal. Only as a last resort would we have to go to the government and say: "We have exhausted the options; there are no others. We want to draw down from the bank." There would be a period of time. It would not be automatic.

Mrs. Grier: If there is going to be a period of time and if you are going to have the time to explore other options, make a submission, talk to the government, talk to the public and all the rest of it, why do you need this written into a regulation? Is that not an approach that is available to you at any time whether it is in a regulation or not?

Mr. Campbell: We would not want to put ourselves in the position of being liable to break the law. When we show you this chart, that is what we intend to do and that is what we have committed to do. We do not intend to put ourselves in the position of breaking the law.

Mrs. Grier: What is wrong with coming to the government and saying: "We have an emergency. Five months from now, we are going to need to exceed the limits in regulation such and such. Here is how we want to do it. Can we have a revision to the regulation for a period of six months or however many months to enable us to overcome this contingency?"

Mr. Taborek: If you recall, in the 1970s a fairly large company that had given a commitment to achieve a limit was unable to do so and the government revised the regulation for it. The effect of that was to poison relations between government, industry, the public and environmentalists for years on end.

The simple argument was, "You said you would do it and you did not." We do not want to be in a position of telling people we can do something and not being able to do it. We do not want to be in a position of putting at risk a law that the public values so highly. We want to be very clear, think through the problems we will face and what we can do, and we want to guarantee that we can do it.

Mr. Campbell: That is why we mentioned complying with the realistic law. We think we have and will have the best record of any utility anywhere. As Joe or Art said, we will probably be the first utility anywhere to retrofit scrubbers to existing, older plants. We can give a commitment to do those things, but the proviso has always been in there that we have to have that flexibility of the banking. If you remove that, we would not be able to say honestly that we would be able to do that. Ontario will have one of the best records in the world. If you make it too inflexible, it will put us in the position of breaking the law.

Mr. McLean: I want to ask you a question and it is a very key one. Why can you not go back to the government and ask for a change in the regulation to expand the time? If you want a six-month extension for a specific problem, why can you not go to the government and ask for that rather than asking for it when you run out of your banking? Why can you not do it this way?

Mr. Campbell: Maybe we are not very far apart here. We are talking to the Ministry of the Environment about procedures we will have to go through to withdraw from the banking. In other words, there will be regulations. We will not just be able to do it whenever we want. We will have to convince the government that there is some special circumstance.

Mr. McLean: I thought you said that you did not have to, that you thought you could do it without drawing from the bank?

Mr. Campbell: Our plan is to do it without. Let us talk now about if we have something beyond our control and we have to do that. There are still going to be controls on that. We are still going to have to go to the government and go through some procedure to draw on this.

What we are saying is that with the existence of banking, there is a recognition that the procedure and the provision are there. If you take away the banking, you are putting us in the position of having to say to the government: "We want you now to change your law. Your law is too tough."

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You not only put Ontario Hydro in that position, you make Ontario look ridiculous in the international community. It will say, "They set a tough law, they could not meet it and now they have to back off." You talk about problems with the Americans. I think that would cause you far more problems than having a realistic law we can meet that has some flexibility in it. There is still less flexibility than our American friends have, by far.

Mrs. Grier: Do you feel that when the US gets into having regulations on its utilities, US utilities ought to have the same flexibility you have been given?

Mr. Campbell: They have a lot more right now.

Mrs. Grier: You are the leaders; you are the best. We all accept that as given. When the Americans begin to write regulations, presumably they are going to have regulations that are going to meet our regulations before they pass them. Do you believe those regulations on US utilities should have the same flexibility you have been given?

Mr. Taborek: We cannot answer that. The right regulation depends on the circumstance that the utility finds itself in, its access to alternatives and the way it generates. The Americans now have it, because they have a pounds per million BTU type of regulation. If they produce more, they can pollute more. It is built into their law now. It is difficult enough to define a good regulation for ourselves, not for all the American utilities. You just cannot do it. It is a job they have to do themselves.

Mrs. Grier: So a utility that does not have all its eggs in the nuclear basket has more flexibility in meeting these kinds of regulations?

Mr. Taborek: Yes.

Mr. Campbell: But that is not good for the environment. It is bad for the environment.

Mrs. Grier: That is another whole argument.

Mr. Taborek: Somebody mentioned that if the Americans had exactly the same law and if they were to implement a bank, they could have something like nine million tons, or some large number, in the bank.

Think for a minute if the Americans did have a large number in the bank. It would mean two things. Not only would they have agreed to an acid gas control program and met it; they would have removed nine million tons more than they would have had to according to the law. They would have done better. That could only be brought back under some kind of strict and regulated control device.

There are some winning aspects to some of these regulations. If you have a lot in the bank, you have been doing a super job of cleaning up acid rain.

Mrs. Grier: Maybe it is only that the regulation with which you are being forced to comply has too high a limit to begin with. If it is technologically possible to bank 100,000 tonnes a year, why should the regulation not be such that you do not exceed that limit?

Mr. Taborek: Set whatever limit is appropriate to serve society's needs. The argument still holds.

Mr. Partington: I have the same sort of question. If you look at the schedule you have shown us on page 2, and if you take the years from roughly 1987 to about 1993, certainly in 1989 your banking would be about 240,000 tonnes in that one year. I do not know if you have the figures. For example, if you took the five years ending in 1993, assuming you had no draws, do you know what you would have in the bank based on your schedule? I do not have a ruler here and I am ball-parking some of the figures.

Mr. Campbell: A substantial figure.

Mrs. Grier: That is 500,000.

Mr. Partington: It looks like it could be 750,000, something like that.

Mr. Campbell: Yes.

Mr. Partington: I guess there could be a perception then that if you take that and forward average it over the next five years, although you show on your chart the line that is about 30,000 below the 215,000 limit, subject to government approval, you would have the right to go substantially above. To the extent that you have a fixed target, it looks like the banking formula gives you a legitimate right to go back to 1985 standards for the five years going from 1994-95 to 2000. I wonder if you can comment on that.

Mr. Campbell: I just want to mention that it is a five-year average; so the high years would drop off as you went farther to the right.

Mr. Partington: It is a five-year average?

Mr. Campbell: Yes. It drops out of the bank after five years.

Mr. Partington: I understand that.

Mr. Campbell: The other thing is that we would assume--and we are working with the Ministry of the Environment; we are negotiating with it--banking would not be a blank cheque. Maybe that is an unfortunate analogy. I believe there will be very strict regulations and requirements on that. The banking concept is only the recognition in law that there can be contingency and there needs to be flexibility. That is all it is. It is not saying there are no controls on it.

Mr. Partington: I agree with that, but this seems to give a prima facie right to go ahead. I know you have to get that. To follow up, and I know it has been mentioned by both Mr. McLean and Mrs. Grier, you indicated earlier that you did not expect you would have to draw on the bank. I think you indicated that.

Mr. Campbell: That is right. We are planning not to.

Mr. Partington: If you did, it would certainly not be more than 100,000 tonnes a year. Following what Mr. McLean said, if that is the case, why do you need banking provisions? Why can you not go back to the government? You are a quasi-government corporation and if both parties act in the public good, I suspect they would probably want some public forum for a decision. Why could you not just go back to get the regulation changed, if it is needed?

Mr. Campbell: The history of governments setting regulations that were too stringent and then having to back off--they may have accomplished 99 per cent and have had to back off one per cent; that becomes the whole issue and it discredits the whole program. It would not only discredit Ontario Hydro, it would also discredit the Ontario and the Canadian programs. That would be used by our critics and our opponents in the United States to say, "Ontario has backed off and changed its regulations," and that is why we are arguing for realistic regulations.

We have a lot to be proud of here. We have a very fine record and we will be leading with it, but if you set it too inflexibly, you are going to discredit your own program and you are going to discredit it in the eyes of the rest of the world. The US senators who were arguing against Canadian power and that kind of thing are not going to give you credit for all the achievements you have made, but they will certainly magnify it if you have to change the law.

Mr. Partington: You are suggesting the banking provision is there as much for the benefit of the government not to appear to have been too tough and having had to back off as it is for Hydro to do the job?

Mr. Campbell: I think it is realistic and honest. If you set a law that is unrealistic, I think you are kidding me.

Mr. McLean: Is not the banking process sending a message to them just as well, a stronger message, saying Canada is allowing you to do this?

Mr. Partington: What you seem to be saying, Mr. Campbell, is it may be that the government has set a limit that is too tough, and so in different language it is allowing itself an out by inserting the banking provision.

Mr. Campbell: The regulation is appropriate, but it was set with the idea that it had that flexibility in it. If you are now trying to take away the flexibility, the regulation would be too tough because it would lead to discrediting the program.

Mr. Partington: In other words, it could do it by regulation but the appearance of doing it would look bad for the government; therefore, it is better to do it this way.

Mr. Campbell: It would certainly look bad for Hydro and I suspect it would discredit not only the government but also Canada. We have a lot of credibility. I do not know whether you have heard Senator George Mitchell. You may have heard somebody speak of him. He was quoted recently in the New York Times as saying that Ontario has done more in a single day to reduce acid rain than the Reagan administration has done in five years. We are spending \$5 billion; that is all the US government is spending for the whole program on acid rain in the United States.

We have something to be proud of, but if we are unrealistic, we are kidding the people, including the Americans. I do think there is any point in kidding them. We are good, but we are pretending to do something that is more than we can really do and we may have to back off at some time in the future.

Mr. Chairman: A number of committee members have not had a chance to speak yet. I will allow the occasional supplementary, but in the interest of fairness I do not want them to be too many or too long. Mr. Partington, if you are finished, perhaps I could go back to Mrs. Grier.

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Mrs. Grier: I have only one more, if I may, Mr. Chairman.

Mr. Campbell or whoever told us implicitly today and more explicitly the last time that the provision of the banking flexibility was part of the negotiations as to what the level would be. What were the tradeoffs?

Mr. Campbell: I am not sure I understand the question.

Mrs. Grier: If it was a product of negotiation, I assume you had one position and the government had another and the compromise was, "We will give you the flexibility of banking." What were the two positions that arose to that compromise?

Mr. Campbell: You are not talking about negotiations that went on over any single period of time. This has been a matter of contention between Hydro and the government for many years. As you can see, it has gradually tightened the regulation and tightened the noose--I should not use that term--just tightened the regulation.

The fact we were able to say we can realistically meet the target with some realistic expectation that we can deliver on that promise, that is the tradeoff. If they had set a regulation and we had to come here under oath and say, "Sorry; we do not really believe we can meet this regulation," I do not think that would be good for Hydro, Ontario or Canada. I am not talking about the government now; I am talking about all of us.

I know everybody wants to put the best possible program in place, but on that basis, we said we could do it.

Mr. McLean: With the bank.

Mr. Campbell: We are going to be going flat out to do this. We have mentioned we are spending \$7.7 million to go into environmental assessments now and the different technologies. That is going to take a few years. We go from there to construction programs. We will be hard pressed and we will be stretching ourselves to meet the schedule to do this, but we think we can do it. If you take away the flexibility--I am here under oath and you ask me whether we can really realistically achieve this, I would have to say, "Sorry; we cannot." You are kidding the people.

Mrs. Grier: The regulation was set taking into account what you agreed you could probably meet?

Mr. Campbell: What we realistically could do, because there are physical limitations on what we could do. It is going to take us, we said, seven years to get the technology installed, because it takes us three years for environmental assessment. I remind you: it is not going to be easy. These things produce a lot of acid sludge, and what community is going to say, "We want that in our backyard"? Can anybody volunteer a disposal site for the sludge from those precipitators? That is going to be a serious problem.

That is going to take, we think, three years of environmental assessments on that issue and then four years for construction. We are on a tight schedule now. We think we have made a major commitment. We are spending more money on this than any other utility in the world that I know of, but I do not want to kid anybody. I think if you try to grind it down more than that, you are kidding people. That is my view.

Mr. Poirier: The principle of the banking--I say "principle" regardless of whether you are talking about Ontario Hydro or whatever--is a bit scary in the sense that the other side of the knife is that it can be a handicap for a Canadian negotiator going to the US, with the lack of reception we have had in the US pertaining to acid rain control, to say, "We will have banking." I heard you mention a little while ago that you were making

provisions for about 100,000 tonnes a year with the banking?

Mr. Campbell: We are saying we are planning not to use it. If we had to use it, our best estimate is that perhaps we would be asking to withdraw 100,000 tonnes. If it were any more than that, we would all be in trouble. We would have some kind of catastrophe.

Mr. Charlton: Is that for two units as opposed to six?

Mr. Campbell: At Pickering?

Mr. Taborek: One Darlington unit, for instances, is 90,000 tonnes. Low water levels in a year I think is something like 70,000, if memory serves me right.

Mr. Campbell: Talking about acts of God.

Mr. Poirier: Right. For peak demand, for example, if you are having a problem, if one year you would have to go to 100,000 or, God forbid, even more, there could be a provision in the second or third year to get to that limit and beyond. What worries me is, has this been negotiated with the government for that 100,000? If so, what kind of provisions would you have to keep it down? How about 75,000, 50,000 or 25,000?

Mr. Campbell: We have been given two years. We have been given until the end of 1988 by the government to develop a detailed plan on the technology we will be using and so forth. Part of that will be the procedures we would have to go through for drawing on this. We are prepared to work out something realistic on that with the Ministry of the Environment to give the appropriate degree of public assurance that we are not going to use this. I categorically reject the idea that we are going to save up all this acid and then dump it all on the Ontario public. That would be ridiculous. Why would we go to all the expense of bringing it down and then suddenly dump it just because we felt like killing all the fish one year? We do not intend to do that.

Mr. Poirier: So at the moment we are talking, you do not have an entente with the ministry for that level of banking or the principle of banking as a matter of fact?

Mr. Campbell: We have had discussions with them. I think they have a pretty good understanding of what the kind of swing is, and I think we are talking in the same ball park of 90,000 to 100,000 or maybe 70,000, 80,000 or 90,000, somewhere in there, but that is something they could contemplate when it was a situation outside our control, but it would not be something we would plan for. In other words, if we came along and said, "In two years or three years we need that," they would say, "Get lost. In that time you can take other measures to prevent that, even at higher cost to prevent that," so that is what we intend to do.

Mr. Holt: We are talking about hypothetical situations in the future and what Hydro would do. I think, in fairness, we should look at what we are doing today. We have right now--and we have had for the past three years--two crippled nuclear reactors at Pickering that are out of service. We have not come along and said, "Give us some relief from these regulations." What we have done is continued to lower the sulphur content of our coal, taken other actions and stayed within the limit despite not having those units. I think that shows how we would react in the future. It has cost us money to do that, and we could have saved ourselves money by coming on and saying, "Give us

relief from that until those units are back." We did not do that, and to me that is a lot more demonstrative of what Hydro's position is to meet these regulations than talking about hypothetical situations in the future.

Mr. Campbell: That is a good point because I think a certain measure of goodwill and trust is necessary here. You can say, "We do not trust Hydro," but I think you can point to our record, and it is a pretty good record. If you can get the Americans to do half as much as we are going to do, I think you will be doing very well.

Mr. Poirier: I have one last question. Would you not agree that the whole question of banking, whether you use it or not, might be perceived as to help the Americans against us in the arguments for the seriousness of controls?

Mr. Campbell: I do not believe so because, as I say, if they would come to the position of retrofitting scrubbers to their old plants, as we are doing, I think we would all celebrate. I do not think we would worry whether they were to retrofit scrubbers to plants they were not using. I think we would be quite happy if they would put scrubbers on the plants they were using.

Mr. Poirier: The way it seems, if we are going to make any inroads in the United States, we will have to be 10 times as good as they are before they will even start to listen. Would that not be true?

Mr. Campbell: I think we are a lot better. I do not think we have to apologize to the Americans one whit for our program. I think their own people recognize this. We have had approaches from all sorts of US sources that say: "The Canadian program is a real program. The Ontario program is a real program. They are reducing acid rain."

Mr. Chairman: Thank you, Mr. Poirier. Mr. Partington is next. I should indicate that I have a list of five more speakers. I do not want the morning's proceedings to go on too long in that we have to be back at two o'clock. I just caution everybody.

Mr. Campbell, if there are questions that perhaps would not be answered this morning--I am sure our researcher will have one--I wonder if we can provide some questions to you in writing and you can reply to the committee.

Mr. Campbell: Sure. We would be happy to do that.

Mr. Partington: I suppose if the emissions bank to 1993 were used in subsequent years, it would still be within overall limits, so there would not be any plan to exceed the limits. Based on your plan for the future, do you have an expectation that you will be using all or any part of your bank limits, for example, in the period 1993 to 1998?

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Mr. Campbell: Our plan is that we will not do that.

Mr. Partington: For example, is it reasonable to expect that to 1993, because of your continued use of nuclear power, it will be unlikely you will draw on the bank to 1993?

Mr. Campbell: I hope so. I have my fingers crossed.

Mr. Partington: Because you are going to be relying more on fossil

fuels after 1993, is there a much greater likelihood that you will have to draw on the bank than before?

Mr. Campbell: As you can see from the chart, after 1994 or 1995 we will be closer to the line, and that is because we will be burning more coal, so we will be tighter in those days. Our bank account will be very thin then because we will be dropping off those good years. If we achieve what we are talking about, the average that we will be putting in the bank will be diminished to perhaps only 25,000 tons a year; so we are getting pretty fine then.

Mr. Partington: Is there any question that your technology may not be in place to do the job and that may why you have to draw on the bank?

Mr. Campbell: No, that is not our plan. We think we seven years is realistic to install the scrubbers, three years for environmental hearings and four years for construction. We think that can be done. We have a lot of experience in construction, and that is a realistic time, so we plan to do that.

Mr. Charlton: In spite of your corporate confidence, your political naïveté astounds me, it really does.

Let me start out by saying that I do not think your real intentions are what are being debated here in terms of this banking question. I think your record is fairly clear. You have talked about discrediting programs.

Mr. Campbell: It would discredit Hydro and I would think it would reflect badly on the program.

Mr. Charlton: I totally disagree. I think we are in a major battle in the US, and you all know that. We have been in that battle for a long time now. I have spent a number of years as Environment critic and I watched that battle make no movement at all. Those were the days when the Ontario ministry was taking the position, "If we wiped out all the acid emissions in Ontario, it would not solve the problem; therefore, we are not putting the program in place." That is what was said all across the US. It was not until we had the federal-provincial announcement of a program that we started to see some movement in the United States.

You want to know how to discredit a program. Regardless of what you eventually accomplish between 1993 and 1999, put in place a program where you are already under the limits, put in a banking provision, and what is going to be the comment in the US debate for the next seven years at least or maybe for the next 20 years? "The Canadians have a program that sounds good, but it has an automatic default mechanism built in." You people sit here in Ontario and run your corporation. How are you going to counter that in the political arena in the US?

On the other side of it, if you set up a strict, hard-line regulation and the government says to you, "If something happens, come back and in a very tough, public way, we will negotiate a three-month, six-month or one-year exclusion from a limit," a limit which you have already met. Let us not try to make analogies to Inco or to somebody else where they never came close to the standard of the regulation that was set out and then was weakened. We are talking about a situation where you are already below the limits. You are telling us that except for exceptional circumstances you are going to be below those limits.

Mr. Campbell: Could I answer that point? I think that is an important point. It just is not correct, Mr. Charlton. When this regulation cut in, we were emitting about 500,000 tons. We were above the 430,000 level.

Mr. Charlton: I am talking about the period of debate and negotiation in the US between now and the year 2000.

Mr. Holt: You say we are comfortably below the limit. The reason we are comfortably below the limit is that we have spent money by design to get below the limit, because we have to do that.

Mr. Charlton: You are not addressing my point. My point is simply this. We have major problems in the negotiating process with the US. You are not going to be able to prove whether you need to use that bank until the late 1990s. You can sit here and say what your intentions are until you are blue in the face. You may make me believe and you may make Ruth Grier believe. That is not the question in terms of the impact of building in what will be sold in the political arena south of the border as an automatic mechanism for failure. "What the Canadians are trying to sell you is that they have put a tough regulation in place and they have built in this fail-safe failure mechanism, so is it really tough?"

That is how it is going to be played down there. They are not going to be hearing you people. You are not going to be at the public meetings outside of some coal-fired plant in Ohio.

Mr. Holt: The reason we are underneath the limit by a comfortable margin is that we are trying to have a strategy that means we will not have to use the bank. If we just met the limit, then we would be exceeding it. We are not staying under so we have banking stuff to use.

Mr. Charlton: I understand everything you have said to us except the political strategy you have set out for what gets perceived as good and bad. I am telling you that you are so far off the mark in terms of what will discredit us that--

Mr. Campbell: I will agree with you in terms of your judgement on political strategy because that is your profession.

Mrs. Grier: Not yours?

Mr. Campbell: What I am saying is that Hydro will not be put in a position of breaking the law. If you set laws that are unrealistically tight, we are going to have to spend needless money to meet those stricter regulations. We are not going to put ourselves in the position of knowing there is a chance we are going to break the law. We are not going to be put in that position. If you want gestures, we are saying there is going to be a very high price tag for no appreciable gain. I am saying that is money you are taking out that could be spent more productively. Even if you can tax Hydro and spend it somewhere else, I would rather see that than see money wasted.

Mr. Charlton: Nobody here questions your need for some flexibility. They may question the extent, as we heard from Mr. Poirier, and they may question other aspects of the need for flexibility. The question is not the flexibility; the question is how you get it and how that approach to getting it is perceived elsewhere. We are not arguing about whether you need some flexibility in meeting emission control limits. We also have the same discussions about necessary production surpluses.

Mr. Hill: Can I comment on the points you made?

The Acting Chairman (Mr. G. I. Miller): It is 12:10 p.m. and we have a couple of other questioners. You have made your point. I think what we really want to do, and what Brian is trying to indicate, is to try to provide the Ministry of the Environment with tools that are going to stand up against our federal counterparts and our American friends. The ultimate goal of this committee is to provide that. Mr. Charlton has made his point. If you can respond that we can get the needed tools, we can succeed this morning. I do not think we want to get into a dialogue.

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Mr. Campbell: We are not as far apart as it may appear. I sense that from many of the members of the committee. I believe this can be handled in negotiations with the Ministry of the Environment on the methodology for giving us that flexibility. That is something that has not been spelled out in detail, the methodology for withdrawals to give us that necessary flexibility. There are certainly going to be controls on that. The concerns you have about the integrity of our program and how it can be sold internationally or whatever can be addressed by that. We are quite prepared to work and negotiate. I guess it is more a negotiation with the Ministry of the Environment, because it is in the position of controlling us on this. It is not that we are equal partners, but we can negotiate with the ministry on that kind of mechanism.

Mr. Charlton: Just think very seriously about what I have said in the context of the position you leave our negotiators in for the next seven to 10 years in terms of being whipped with this automatic mechanism, which as I said, you fully intend never to use, but your intention will not become part of that debate.

Just this last comment. The first thing that popped into my head when Ruth and my staff started talking to me about this banking procedure--and my colleague there had a good chuckle over it when I threw it back--was some American sitting there and saying, "Are they going to ask for market interest on the bank when they set it up and start putting in deposits?" Think about all the possible political questions.

Mr. Hill: Can I please make one comment?

The Acting Chairman: I think not. I think we will leave it at that, because we do have a couple more things. I think you made your point.

Mr. Hill: I would like to make a suggestion which I think all levels of government in Canada, provincial and federal, have to face. First of all, categorically, many of us at Hydro are just as committed to the reduction of acid gas emissions and improvement in the acid rain position as anybody else, including the Canadian Coalition on Acid Rain. I am personally in agreement with it.

However, I have been in the utility business all my life and I think I know something about it. I was in New York City yesterday. If you look at the US fossil-fired generation, unless the state and federal governments do something about it, they will not do anything about the problem for the next quarter of a century. I am serious when I say that.

The Acting Chairman: I think you have made an excellent comment. One

of the tools we need and one of the questions I put on my list to ask is can we make money off waste to encourage us to move forward.

Mr. Campbell: Mr. Charlton raised one point I did not get a chance to answer on the credibility of this program. I appreciate the need for selling the program internationally, the difficulty with that and perhaps explaining that we have a program. I think we have the best record anywhere and we should be able to sell that. It is not as if we were bloody poor salesmen.

Second, what kind of credibility is it going to give to the program if I have to come to a committee like this--whenever I am asked questions, it is under oath and I tell the truth--and members of the committee ask, "Do you believe these regulations are realistic and you have a realistic expectation of meeting them?" I will say, "We will do our damndest, but we cannot promise." Then the headline will be, "Phoney Regulations."

Mrs. Grier: That is exactly what Inco said.

Mr. Campbell: How is that going to sell in Washington?

Mr. Charlton: That is what you are saying to us anyway.

Interjections.

Mr. Campbell: It is not. We are saying it is a good regulation, but it requires some flexibility.

Mr. Charlton: That is the same thing.

Mr. Campbell: I would rather have a program that errs on the side of being modest than try to have a program that pretends to do something we cannot do. That will be seen through as phoney. In the long run, you will have a harder problem with that.

Mr. Epp: Mr. Campbell, nobody disagrees with you. It is a matter of how far we go and what the public is prepared to pay. Maybe there is a perception in the committee that Ontario Hydro has not done as much as it could. Unless you are pushed all the time, you do not go as far as you can. That is the way it has been over the years, and we have to keep on pushing and pushing in order to get to a realistic goal.

Now, very quickly, let me get into a very noncontroversial area--

Mrs. Grier: Why?

Mr. Epp: Why do we always compare ourselves to the US administration if it, i.e., the President of the US, does not even admit publicly that acid rain is a problem? He does not even admit it is a problem. Yet we compare ourselves with the US. We say this is what they do and this is what they say, and Reagan says: "There is no problem. What are you people talking about?" If we spend \$500 million or \$1 billion, we are spending it on something there is no problem with. Has he not said that recently or have I read the wrong newspapers?

Mr. Campbell: I believe you are right.

Mr. Epp: He has said on more than one occasion that there is not a problem.

Mr. Charlton: He has also said on one occasion recently that he was wrong.

Mr. Epp: The point I am trying to make is that we are comparing ourselves to somebody who says there is no problem, and we are trying to say, "We are better than him."

Mr. Campbell: I agree with that, and we have to have our own program. I guess the other point I was making is that we have the best program anywhere, the US, Europe or anywhere. We are making the most commitment of anywhere for the size of population of Ontario. We should be able to sell it.

Mr. Epp: I am not arguing with that. All I am saying and the committee is saying, if I judge it correctly, is that irrespective of whether we have the best program in the world, it is going to cost us money. I think the public is prepared to pay more money and the public is expecting the government and Hydro to put in stronger regulations to meet tougher standards. In other words, we want substantial improvement, even over what we have now, irrespective of what other political jurisdictions do.

Mr. Campbell: I agree with that. Our point is that we are not reluctant to spend money. As I mentioned, it does not come out of Hydro's pocket; it comes out of the pockets of our customers. Sometimes in other contexts we have been accused of spending too much money, but we are not reluctant to spend money to do a job that is needed. No matter how much money we could throw at this problem, we physically could not move much faster than we are moving on this chart.

I mentioned it is going to take seven years--three years for environmental assessment and four years for construction--to have scrubbers in place. As a gesture, we could throw more money at the problem, but it would not improve the results. That is where I draw the line. That is what I would argue against. A realistic program is something we should have. I do not think we should be throwing money around. It would be better to spend money on other social problems than throwing money at something we are not going to affect.

Mr. Chairman: Any further questions, Mr. Epp?

Mr. Epp: No, I will pause there.

Mr. Wiseman: I will be short, but I do not have all the problems with the banking system that some of my colleagues do because whichever government is in at the time will make sure the right thing is done.

For the members who were here yesterday and listened to one professor, we would have to agree with the chairman of Hydro when he mentioned as an example the people south of the border. The senator who brought in the Clean Water Act admitted a lot had been done to clean up the waters in the US, but he had not reached his goal; so I would be a little afraid of the same thing happening here.

If I heard the chairman of Hydro right, he said that if you set these standards so high, the one thing people south of the border will think is the same thing one of our learned professors from the University of Toronto said yesterday. There get no credit hardly for what they had done to clean up their waters in the US but that they had not achieved the goal they set out to do. I think we have to watch how we are perceived south of the border because we are trying to say we are doing a good job and we are not.

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I think it was the professor before him--I do not have his name--who mentioned a sawing off. Say you had a breakdown at Hydro and rather than going into a lot of costly methods to cut down your emissions, you bought from Falconbridge, if it had some extra and if it was under the limits by a certain amount, for just a short period of time. At first when I thought of that, it did not sound so good, but then I thought if there was a breakdown at Hydro and you had to draw on that for two months or whatever, does that sort of arrangement make sense or is it too far-fetched? Could it be worked out?

Mr. Campbell: I hesitate to get into that area because it is quite a philosophical question. Our presentation has been based on the fact that controls are on Hydro and what do we have to do ourselves.

As for the theory which I understand you are suggesting and which the professor was discussing, for example, we are proposing to spend basically \$5 billion in the next 10 or a dozen years. The theory is, is \$5 billion spent on our system the best way to reduce the acid emissions in Ontario? The answer may be, "No, that is not the best way." In other words, if you had \$5 billion, you might be able to spend it on reducing acid from Inco or mines or whatever and get a lot more reduction for the same amount of money.

I do not like to get into that area because that is where politicians and governments have to decide. Going back to Mr. Charlton's comments on perception, you might actually achieve a better result. In theory, you could do that. For example, Inco has far more emissions than we do and our emissions, once we get down to a low level, are far more costly to scrub out than the emissions of Inco. If you are looking at the overall acid situation in Ontario, there might be more efficient ways to do it than to try to take it out of the coal plants because it is tough to do. A scrubber is a very inefficient piece of equipment and it reduces the energy output of the plant by about 10 to 15 per cent.

There are those theories, but my perception is the regulations are on us and we have to reduce it, and we are not allowed to do that.

Mr. Wiseman: I take it you would be in favour of that.

Mr. Campbell: That kind of theory, I would suggest, would better be debated by people such as yourselves who have to make other kinds of tradeoffs. I would not like to suggest that as chairman of Hydro. We are prepared to meet at very high cost the controls that are put on us. If you are asking, could the money be spent in a better way in Ontario to improve the total environment, the answer may well be yes, but that is not the question that was put to us.

Mr. Wiseman: I was wondering whether, rather than drawing on your bank which you had just saved up, you could buy or use somebody else's at a lesser cost and keep the cost down to your consumers for a short period of time rather than investing a couple of hundred billion dollars for a short period and putting that across the whole cost to the consumer.

Mr. Campbell: There are other ways. We are going to see a number of these things done around the world. The Europeans are starting to address this problem right now. It is a major problem.

The Acting Chairman: I believe there were some people on the list and I was on it a while ago.

There is a three-year period of environmental assessment needed to put your plan in place now. During those three years, do you have any plans to use that waste for some useful purpose?

I noticed when we went to Lakeview the other day that you were using the fly ash and selling it. I did not realize that. It gave us the opportunity to pick up that knowledge. We went to Inco where they are using sulphuric acid and exporting it. There is a possibility they will be using it for fertilizer. Is there any possibility of using sulphur from the coal from your units for a useful purpose to get a return? We all have to be concerned about the cost to the consumer. I know we are willing to pay, but can we afford to pay? It puts us in a better position to ask while Ontario Hydro has been able to do that.

Mr. Campbell: That is a good question. The limestone injection you saw at Lakeview has an advantage in that it is a dry process and produces a dry ash that is saleable. There is a market for it. A lot of people like the wet scrubbers, but the problem is that they produce a sludge that as far as I know has had no useful purpose. Mr. Walters is our expert on that.

Mr. Walters: The sludge produced is a calcium sulphate, which has no useful purpose. It can be processed by blowing air through it and producing gypsum. That is probably one of the products that could be produced.

The Acting Chairman: Could you please move closer to the microphone? I do not know whether you can be picked up there.

Mr. Walters: It is possible by processing the scrubber waste to produce gypsum, which is a saleable product. That is done in Japan where nearly all the scrubber waste is turned into gypsum. We could have a recoverable product from a wet scrubber.

The Acting Chairman: Again, Mr. Campbell, we thank you and the Hydro people for coming in this morning and for your co-operation before the committee. It is certainly going to be useful.

Mr. Campbell: Thank you for your attention.

The committee recessed at 12:25 p.m.

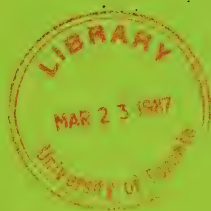
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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, MARCH 11, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

McLean, A. K. (Simcoe East PC) for Mr. Eves
Pouliot, G. (Lake Nipigon NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Also taking part:

Cooke, D. R. (Kitchener L)

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office
Endicott, G., Abatement Policy Co-ordinator, Acid Precipitation Office
Griffith, C., Senior Economist, Policy and Planning Branch
Misra, Dr. P. K., Supervisor, Atmospheric Model Development Unit, Air Quality
and Meteorology Section
Shenfeld, L., Manager, Air Quality and Meteorology Section

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Wednesday, March 11, 1987

The committee resumed at 2:05 p.m. in room 2.

ACID RAIN
(continued)

Mr. Chairman: Good afternoon. This afternoon we have the Ministry of the Environment back again. The ministry will be back again tomorrow morning, so if you have not had an opportunity to have answers to some of the questions you might have, there will another opportunity tomorrow.

The ministry has provided a wealth of information in response to some requests the committee had. As you will recall, it was requested by the committee that we ask the ministry to provide us with some economic impact data for some source-receptive modelling, and we asked for the ministry's response to the second position reports of the companies. Almost all that information has been provided in a package handed out to the committee members yesterday. I hope everybody has perused it and will have questions arising from that.

First, however, I would like to ask Wayne Scott to take over the proceedings. You probably have a statement you would like to make, Wayne. If you would introduce your associates first, I would appreciate it.

Mr. Scott: Thank you very much, Mr. Chairman. On my immediate left is, as you may remember from the first day of presentations, Carl Griffith, and on his left, Giles Endicott, the abatement policy co-ordinator from the acid rain office.

We are back today to address, we hope, some of the concerns the committee has and a number of questions that have arisen in the minds of the members of the committee that were transmitted to us through the chairman's office and also in the course of discussions we have had with your research officer.

Today, we are going to address a small number of very specific questions to attempt to clarify a few areas where there appears to be some uncertainty or a need for some clarification. We are going to begin with Giles Endicott. He will be providing an overview for the committee, sort of a literature review and a quick summary of what happens with regard to banking in other jurisdictions. Where similar programs are called by other names in other jurisdictions, it may be of benefit to the committee to know what are the differences and the similarities.

Following that, Carl Griffith will address the questions and provide the additional socioeconomic information that was requested in your letter.

Following that, Dr. P. K. Misra will join us up here. We have a small table, so for microphone purposes we will switch one team and bring in the modelling team secondarily. Dr. Misra is the supervisor of the atmospheric model development unit within the ministry's resources branch. He will be presenting the bigger picture, what happens in Canada, Ontario and North

America when we look at a number of different emission scenarios, and addressing the question that was raised in your letter, Mr. Chairman.

We are looking specifically at three options, so the committee members can come away with a reasonable range to consider without looking at all the options, because there are thousands. We also had to appreciate that there were some time constraints, that the committee wanted the information and that we had to work under a fairly tight time frame, so we looked at essentially three options.

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Those options may be familiar to some of the committee members. Essentially, the first option is the 1980 base case. The second option is what would happen if only Ontario met its 1994 reduction limits. The last option, and the one we are hoping will come to fruition, is what will happen if we see a reduction in the United States, Canada and Ontario.

Last, we will have Lou Shenfeld, the manager of the air quality and meteorology section within our air resources branch. He will be spending a few moments presenting a very quick overview to help us understand a little better perhaps the differences between looking at a problem from a long-range perspective as opposed to looking at a problem from a short-range perspective. He will be looking at the relationships.

We are going to try to use the past to provide us with a much more realistic basis for evaluating what might happen in the future. Rather than attempt to generate a hypothetical situation in which we have to pick from a whole bunch of choices, go down the list making hundreds of choices about what might happen, we decided that when we examined the historical data, it might be possible simply to target in on a single source and get a feel for what might happen under some of the scenarios of interest that had come up in the questioning.

Essentially, what we are going to be looking at in this scenario is the impact on the local community of a change in emissions. Based upon the experiences the committee has had, we have selected the Lakeview generating station. Conveniently, when we examine the historical emissions from the Lakeview generating station, we are able to take data on what happens from an air quality point of view in the local environment and compare what happened in 1985, which was in the order of 44,000 tonnes of emissions from Lakeview, against what the air quality was like in the local Lakeview area in 1972, when the emissions were in the order of 140,000 tonnes of SO₂, which would represent 100,000 tonnes difference between the two, and then in 1981, when emissions were in the range of 180,000 tonnes, which would give you 140,000 tonnes of emissions higher than the year 1985.

We do not claim that the air quality of 1970-71 would be the air quality of 1999 if emissions from Lakeview were in that order of magnitude; rather, this is just to give us a better feel for what does happen with regard to local air quality as the emissions increase.

One of the things we have to keep in mind, and I think the area that is of particular concern for the committee, is the whole question of how air quality relates to health. Our greatest concern is sulphur dioxide, so the sulphur dioxide emissions from the Lakeview generating station are of primary concern close to the station from a health perspective.

As the sulphur dioxide remains in the atmosphere, you are aware of all the complex chemical reactions that are undertaken. Essentially, a transformation takes place at a location some distance from those sources, whether it is Lakeview, a power plant in the Ohio Valley or wherever else. After some time, the sulphur dioxide becomes sulphur in another form, becomes tied up as particulate material. That is the area the medical people are currently examining and that is where the evidence indicates a potential health effect today.

We are trying to keep straight in our minds the difference between looking at local emissions and local health and long-range transport and deposition and their impact upon health. The two scenarios will allow us to look at the two, and, we hope, by looking at the specific historical data for what happens around Lakeview, it will be easier for us to understand what goes on in the relationship between local air quality and emissions from a point source that we are all familiar with.

Having provided that, in the way of introduction I would like to bring to your attention one small problem that we discovered, much to my embarrassment, late last night, which is in the package you have before you, the one entitled "Tables of Emissions: Scenarios for Deposition Results in Boundary Waters." During the meeting we had with Mr. Neufeld we went through some packages and looked at a number of possible scenarios. The data included in here were the data that we discussed at that time. What we did not pick up in the course of reviewing the package was that there is a small error in the way the information is presented. For that I am very embarrassed. It makes absolutely no difference to the modelling, but we would like to replace the packages with the new package.

Essentially, what happened was that for the modelling scenario the numbers that were attributed to Inco and Falconbridge and that are listed as being the Countdown Acid Rain numbers were one of the scenarios that was being examined late in November and early December. In fact, those did not turn out to be the final numbers used in the regulation.

For the record, the Inco number shows up as 250 kilotonnes where the number in the regulation is 265 kilotonnes. The Falconbridge number exists in the regulation as 100 kilotonnes and it shows in your list as 114 kilotonnes. When those are added together there is a total difference of one kilotonne. I believe this modelling exercise requires us to go past three decimal points before we see any change at all in any of the numbers. Since we do not report any of the numbers at that level, it makes absolutely no difference.

Again by way of explaining the number that was there, the first sheet that we looked at when we met with Mr. Neufeld was actually dated March 4, 1986. That continued for several pages. The next sheet was dated as the actual printed date of December 2, 1985. Where a great number of scenarios were run, we jiggled the numbers between plants so that the people involved in the negotiations could pick between one or the other. Unfortunately, we left that one page in when it should have been updated and replaced with our December 17, 1985, sheet that shows the final number.

Mr. Chairman: You are suggesting you have a new handout?

Mr. Scott: Yes. When Dr. Misra is here, he will provide a corrected copy.

Mr. Chairman: To those of the committee who have not read this, it will not matter. Those of us who have will appreciate this.

Mr. Scott: Certainly those people who picked up on that error. I hope I can set your mind at ease and we can get on to discussing the modelling.

I would like to turn it over to Giles Endicott.

Mr. Endicott: Mr. Chairman, as was mentioned, I am going to give you a brief overview of precedents for the Ontario Hydro banking provision in the regulation. It is by no means complete, but I think it may help committee members.

I was not able to find any direct precedent for the way in which the banking provision was framed in Reg. 662/85, which is the one related to Hydro. It is not surprising because the regulation was constructed to fit the particular circumstances in Ontario, with consideration of Hydro's particular obligation to provide secure electric power. You heard all about that this morning and at other times.

Perhaps the closest comparison is in Minnesota, which does have a new acid rain control program, as distinct from the ambient air control program in the United States. It provides for an SO₂ limit based on a 12-month rolling average for two major power plants. Provision is also made for exceptional exceedences if the need can be demonstrated to the Minnesota pollution control agency, based on circumstances beyond the control of the utilities. It is the same basic notion.

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However, there are a couple of other clear comparisons that I think can be made. The first is the implicit banking provided by all emission averaging systems, and the second is the banking provision used in the United States for purposes of ambient air quality.

Turning to the first of those, in effect, banking is used wherever emissions are averaged over a period of time. This is the case with virtually all environmental regulations in all jurisdictions. The difference is in the length of time it is employed.

Where the emission limitations are expressed as X kilotonnes per year, as is the case in Ontario where there are Countdown Acid Rain regulations, there is an implicit understanding that emissions may be higher in one part of the year, provided they are lower in the other. It is just followed by the nature of averaging. The emissions may be, so to speak, banked in one month and withdrawn in another. When it is an annual average, you do not normally think of that as banking, but that is what it is. The principle of that applies equally to monthly, daily or hourly averages.

Generally speaking, the length of averaging time, which is important, is chosen after consideration of the effects of the pollutant in question and the objectives of the abatement program. For instance, as Wayne Scott mentioned, where there are known public health effects from acute exposure episodes, the averaging time tends to be short; an hour, 30 minutes or something of that sort. Where the scientific evidence that is available points to longer-term accumulative damage, the average time tends to be longer. That is the case with the Countdown Acid Rain regulations. Month-to-month or year-to-year variations from any particular source are much less important than the total accumulation from all sources over a long period of time. That relates to some of the testimony the Ontario Hydro officials gave this morning.

I would certainly say that every little percentage counts, and it all adds up. That is what the whole thing is about. You cannot say that a little bit here and there does not matter. That is the whole story. The point is that the variations may not matter so much in some circumstances where accumulation is the real issue and also, as in this case, where there are many sources contributing to the total deposition. Variation by one of them will be drowned out in the averaging that goes on from all the sources.

In this case, I believe the issue becomes whether the total allowable emission level is sufficiently stringent to result in an acceptable loading for the environment.

Hydro's SO₂ limitation could, for instance, have been expressed as 1,720 kilotonnes over a five-year period starting January 1, 1986. In this case, the total limit would have been the same as it is in the regulation as it stands, but Hydro would have had complete flexibility to average within that five-year period.

Instead, the more stringent--you may feel not necessarily stringent enough--banking procedure was placed into the regulation. It requires Hydro to demonstrate the need to use an average beyond one year.

The second pertinent comparison is with the banking procedures that are widely used under the US Clean Air Act. There is a document, which you might not wish to read, of about 50 pages of fine print, which is from the Environmental Protection Agency, under a recent US Federal Register. It is The Emissions Trading Policy Statement; General Principles for Creation, Banking and Use of Emission Reduction Credits, in the United States.

In this case, the purpose is somewhat different, in that healthful ambient air, local air quality, is the objective, but the mechanism of banking is similar in several respects. Banking forms part of an overall strategy in the US related to emission trading and the use of emission reduction credits, as they are called, or ERCs, among polluting sources. The strategy is aimed at reaching ambient air quality requirements while reducing overall costs, and it is explicitly stated in those terms.

The EPA's so-called bubble policy was established in December 1979 and has been amended twice, most recently in December 1986. That is what this document is about. That followed formal public hearings in the US. So banking is not a new concept, a new strange thing that somebody is trying to put over on the Americans; they widely use it themselves in their ambient air quality standards.

Part of this bubble policy involves the legal recognition of the right of polluters to deposit emission reduction credits in a bank and to sell or trade these credits to another source, or to themselves at a later date, in the same geographic area. The geographic area applies because we are talking about ambient air quality in this case.

There is a quite complex system of rules that surrounds the provision. The essential requirements are that the banked emissions are legitimately derived, properly registered with the authorities and will result in a decrease in the total volume of emissions from the geographic area in question. The banked emissions must also generally be surplus to the need to meet the ambient air quality standards as set out in the relevant state implementation plan or SIP.

I presume members are at least somewhat familiar with the American system. As I say, if you wish to read all the details, they are here in this document.

Interjection.

Mr. Endicott: Or your researcher, yes.

This most recent FPA policy statement says, "The EPA endorses emissions trading and encourages its sound use by states and industry to help meet the goals of the Clean Air Act more quickly and inexpensively." The banking and trading of emission reduction credits within a "bubble" is explicitly recognized as being capable of producing "economic savings and environmental improvement at the same time." In this sense, the purpose is quite similar to Ontario's banking procedures as we have applied them in the ministry to Ontario Hydro.

To close, on the issue of credibility, which was raised this morning, I might observe that first, banking does exist in the US, so people on both sides of the environmental issue are familiar with that and second, if the committee should recommend that the banking procedures be tightened up, that might be appropriate and understood, but banking itself is a separate issue having regard to the flexibility Ontario Hydro desires.

That is all I have to say.

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Mr. Chairman: Thank you very much. Mr. Scott, there were a few questions that arose from Mr. Endicott's presentation. Perhaps we could handle those before--

Mr. Scott: I think it would be preferable if we do just one speaker, answer the questions, and then go to the next one.

Mr. Chairman: Fine. Mr. Neufeld has a question he wanted to ask.

Mr. Neufeld: Yes, Mr. Endicott. One thing I do recognize is that the US system is focused on ambient air quality, which is an important distinction. There is one item I thought you might clarify for the committee. It appears there is an important difference between our banking proposal in the regulations for Ontario Hydro and what they do in the US. In the US, to get an emission reduction credit, there has to be a permanent reduction; that is, you can get a credit only if it is demonstrated that this is a permanent reduction for later offset purposes or whatever. In our system, we are talking about a temporary reduction.

Mr. Endicott: Yes. Generally speaking, that is correct, but that is not always the case. Their rules have some exceptions to the permanence of it, as I understand them anyway. But yes, you are right, that is a difference.

I think the difference arises because they are concerned with meeting those ambient air quality standards and they are not in attainment, as they refer to it, with those standards in many areas. Certainly, the policy is intended to result in a net improvement in air quality. There is a general provision they have--maybe that is your next question, I do not know, or maybe it is in your mind--that generally 20 per cent of the reduction is not available for reuse; so the bank takes as its cut, if you like, 20 per cent of

the emissions and it never reappears in the atmosphere. That is an additional wrinkle they have to make sure there is steady pressure to improve the environment.

Mr. Neufeld: It is my understanding that the basic philosophy of the banking provision in the US is that if a particular point source is able to reduce its emissions and can demonstrate that it can do it on an ongoing basis, it should be able to benefit from this by trading them in some kind of emissions trading strategy.

Mr. Endicott: That is right. There is a good deal of emphasis on cost. It is to improve the environment and to reduce the cost.

Mrs. Grier: I confess to not being very familiar with the US system. Can you give me a brief, simple explanation? I am surprised that we are now into comparing our acid rain program with their ambient air quality program. I thought we had an ambient air quality program regulation 308 or 309; which is it?

Mr. Endicott: It is 308.

Mrs. Grier: Surely, we should compare regulation 308 and their ambient air quality rather than Countdown Acid Rain and their ambient air quality.

Mr. Endicott: Yes. The only reason I have made the comparison is that it is banking. That is the thread between the two things. I intended to try to make it clear that there really is a distinction between the Minnesota case, for instance, which is an acid rain control program on top of its ambient air quality, and the ambient air quality in the US.

With the exception of a couple of states, the Americans do not have any programs that have gone beyond ambient air quality to reduce emissions in order to cut back on acid rain. We have ambient air quality plus acid rain control.

Mrs. Grier: Do we have rolling averages or banking in our ambient air quality program?

Mr. Endicott: Yes, in some cases, I believe so. I perhaps should defer to Lou Shenfield. He is the person to ask if you want to get into the details of that.

Mrs. Grier: You are making a rationalization for the banking. I just want to be sure we are comparing apples and apples.

Mr. Endicott: Not strictly, because ours is acid rain control and accumulated damage, and theirs is ambient air quality standards. In that respect, it is different. It is similar in that there are banking provisions.

Mrs. Grier: Our program, Countdown Acid Rain, is based totally on the proviso that it is a reduction in accumulative effects we are looking at, not at healthful, ambient air.

Mr. Endicott: That is right. Healthful, ambient air is already covered under a whole different set of rules and regulations in Ontario.

Mrs. Grier: If emerging studies indicated that acid rain itself had serious health effects, would we then look to design a totally different kind of program?

Mr. Endicott: If those health effects were related to short-term variations, we certainly would. There are known health effects in acid rain--for instance, from the leaching of lead and copper pipes in cottage country--but as I understand it, that is not affected greatly by the variations in any particular time. That is a matter of the lake's becoming more acidic slowly and has its long-term effects.

Mrs. Grier: The kind of health effects that showed, for example, hospital admission rates in the Windsor-Peterborough corridor rising in relation to changes in acid emissions?

Mr. Endicott: Yes.

Mrs. Grier: You are saying that those kinds of studies have not been taken into account at all in the preparation for Countdown Acid Rain and that if we were ascribing credibility to those kinds of studies, we might in fact design a totally different kind of program?

Mr. Endicott: My opinion is that we should design a tighter ambient air quality standard. If those kinds of health effects prove to be the case, then our ambient air quality is not good enough; so that is where we should hit it.

Mrs. Grier: In looking at the banking and the way we are doing it, which is in effect, as you have shown, giving a five-year average to Hydro, the Minnesota regulation you mentioned was a 12-month rolling average; so that going from a monthly level averaged over 12 months to averaging over five years is surely an enormous difference in what you are allowing to happen.

Mr. Endicott: Yes, indeed it is. I was simply trying to make the point that any period of averaging is automatically a banking provision, but in fact we are not allowing Hydro to have a five-year averaging period, because section 7 of the regulation specifically requires Hydro to have banked the emissions, which an average does not. In addition, they must justify the use.

Mrs. Grier: In preparing Countdown Acid Rain, why did you just look at one annual average rather than a monthly average?

Mr. Endicott: The reason for moving to that is that it was felt we were dealing no longer with ambient air quality; we were dealing with the acid rain problem. The old control orders on Inco, for instance, grew out of the concern for local air quality and were based on a shorter time. There was a three-month rolling average for Inco, and it was felt that after you got down to the point where you had controlled ambient air quality sufficiently--or were getting there, at any rate--with an ambient air quality program, then you might as well go to an annual number, because at that point you would be dealing with long-term accumulation, not with the short-term effects. That is how the thinking went. That is why we could move beyond a one-month or quarter-of-a-year averaging to a one-year averaging.

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Mr. Wiseman: In the United States, where there is a banking privilege, how long has that been in effect? Is it long enough that we can get a good reading on how it is working, or has it just been in for a short time?

Mr. Endicott: It has been in since 1979 and it has been widely used.

Mr. Wiseman: I think the chairman of Hydro was saying this morning that it might encourage people to go even beyond what the regulations are asking for and try to keep some credits ahead in the bank. You said, I guess, that 20 per cent of that is taken away on them as a bank charge; they could never get up to their full 100 per cent. Has that been an encouragement in the US since 1979 to do even better, do you think, in the air quality down there?

Mr. Endicott: I think the driving force behind it is the fact that it makes it cheaper. If plant A can reduce the number of tons of emissions at half the cost of plant B, then there is an economic advantage to doing that and selling some credits. That has really been the driving force, rather than anything else.

Mr. Wiseman: We heard from a professor yesterday who had a similar idea for us here in Ontario. The costs that they sell that for--I think his example is maybe \$100 a tonne one might use to save for the bank credits, against maybe \$1,000 a tonne to someone else, and somewhere in between would be the sale price.

Mr. Endicott: Right.

Mr. Wiseman: What are they doing down there with that? Have you any idea? Can you give us an example of what they might sell those credits for?

Mr. Endicott: I am afraid I cannot give you details. The principle you have just stated is exactly right. The sale price will be somewhere between those two numbers.

Mr. Wiseman: Yes.

Mr. Endicott: I am not familiar enough; I cannot give you details.

Mr. Wiseman: Is it readily done? That is really what I am asking.

Mr. Endicott: Yes, I believe it is readily done, commonly done, and there is a market for these credits.

Mr. Wiseman: The next thing is that you mentioned they could sell within a particular area. How many miles' radius would we be talking about when they say immediate area?

Mr. Endicott: It is quite complex, because it is an overall federal Clean Air Act under which states are required to have a state implementation plan, the implementation of clean air standards.

Mr. Wiseman: I guess what I was getting at was if, say, Hydro wanted to buy some and it was located in the Metropolitan Toronto area and Algoma had some to sell, would it be possible to sell credits that far away in the US system, or would that be too far?

Mr. Endicott: I think that would be too far in the US, but the fact that it is too far would arise from the fact that you are talking about ambient air quality. Really, you are talking about local areas where the air quality is not being met and about sources within that bubble. Algoma and Nanticoke would not be in the same bubble.

This is really for illustration purposes, I think, if we were to apply any of this to Ontario, because they are dealing with ambient air and we are dealing with acid rain.

Mr. Wiseman: I always hear in Ontario that after five years-- something like sick credits after a certain time--you do not get credits any more; they are gone; and you have to start over again. Do they break the bank at the end of five years and start over again, or can they accumulate them beyond five years?

Mr. Endicott: No, you can have them in perpetuity, I believe. You probably would not, but you could, yes.

Mr. Wiseman: If I understood it right this morning, the chairman or one of the spokesmen said that after five years our credit system or banking system starts off--

Mrs. Grier: You roll it. You drop one year and pick up another one.

Mr. Wiseman: Is that it? It does not go over the five years, though.

Mr. Endicott: No.

Mrs. Grier: It is a five-year average.

Mr. Endicott: Five years is in our regulation.

Mr. Wiseman: In a sense, you would be cutting back, because you would probably do very well in the first year in a system like that.

Interjection: It would be the other way around.

Mrs. Grier: If you look at their plan, they are doing much better in 1992 or something than they are in 1987.

Mr. Pouliot: It makes you wonder who designs the proposals. That is one of my questions.

Mr. Wiseman: I guess I misunderstood. I thought that at the end of five years of the program they lost those credits and started back.

Mr. Endicott: Again, I think Mrs. Grier is correct. You drop one year and pick up the next one.

Mr. Wiseman: Is it similar in the United States?

Mr. Endicott: No. Their banking is not related to a period like that for their emission reduction credits. As Mr. Neufeld was saying, generally speaking, it must be a permanent reduction for that particular source.

Mr. Wiseman: If a person or a committee were going out to look and talk about a banking system like that, which state would be the best place to look, in your opinion?

Mr. Endicott: There has been some considerable trading in California and Michigan, which I can think of offhand.

Mr. Chairman: Mr. Wiseman can go off to California.

Mrs. Grier: You have really sent a red herring through this whole discussion, with all due respect.

Mr. Endicott: They are not directly comparable; I would certainly agree .

Mr. Pouliot: Merci, M. le président. Bonjour. I was not here this morning, so you will forgive me if I appear to be naïve from time to time. I am substituting on this committee. For my information and maybe for that of some members of the committee, when we are talking about a banking mechanism, whose proposal was it? Was it a Ministry of the Environment or an Ontario Hydro proposal?

Mr. Endicott: I believe it was an Ontario Hydro proposal from some time back. Ontario Hydro convinced the ministry people that it was appropriate in this case.

Mr. Pouliot: I do not want to put you on the spot, but it has been mentioned to some of us and we are somewhat aware of the plans of Ontario Hydro. Using the terminology of a roller coaster, the proposals seem to be a duplication of what they plan to do or what they tell us they plan to do--because there is a matter of credibility with past performances--and the banking proposal, which overlaps.

Before you comment, we see it as a matter of convenience; yet we seem to miss the clout in this affair. For instance, you keep exceeding the standards. You are a public entity--I am talking here in terms of Hydro--when it suits your purpose. You are one of the major polluters with others. Inco, Algoma and Falconbridge have been mentioned under the same method or approach; yet the rules of the game are entirely different.

We had distinguished, learned representatives who volunteered to favour us with some of their comments yesterday. The professor emphasized the point that Ontario Hydro could simply keep on being a major polluter and pay the fines. That is a real scenario in accordance with the proposals, since it is the only game in town. I will not say it is a cartel, but let us face it, it has a monopoly. It could then just pass it around to the consumer, who has no protection. Competition is not the order of the day. It was removed from the marketplace long ago.

I see, for instance--and I am quoting from some of our research material--that Ontario Hydro is somewhat clear that it will not install scrubbers until at least 1994. There is no mechanism. Your scenario ends, and, in 1994, there is no recourse. Of course, there is always the right to establish another mechanism in lieu thereof. The possibility is there, and it is less and less hypothetical as we develop the theme that Ontario Hydro could at its convenience--and I am trying to act without prejudice or bias--do what it has been doing all along, really at no penalty cost, no matter what it does.

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There is not even a mechanism in place to ensure that some of the money, again hypothetically, derived from excesses will be put back into the system or that Ontario Hydro will be forced to clean up at any time. We are not seeing this. We are suspicious--I am, anyway--because it seems that this plan, which we were force-fed by Ontario Hydro, does acquiesce to a T with what its plans to do or not to do are.

We are concerned about the increase of coal. We have a change of direction as we get into the termination phase in 1993-1994.

Mr. Endicott: Might I respond to that? In some senses, I have to respond as an individual. I was involved in that set of negotiations. It is my feeling that whatever level the Ontario government sets Hydro's emission standard at, whatever the limit is, there is a reasonable argument for some flexibility around that, given that we are dealing with a problem of long-term accumulation of damage and not a short-term health effect. If we were not tough enough, fine. Make it happen that we are tougher. But there ought to be some flexibility around that, because of Hydro's real obligation to supply electric power to Ontario in the face of uncertainties. That is a real thing, so some flexibility ought to be there.

Sections 7 and 8 in the regulation envisage two different sets of circumstances. One is the bank being provided for events beyond Hydro's control, like an unanticipated cold winter or a growth in demand beyond what has been predicted. To get those credits out of the bank, however, they are required by 1988 to come up with a procedure as to exactly how much they should be allowed to withdraw and what the circumstances would be.

Similarly, section 8, which is the sort of catastrophe provision, requires them to come back and prove it. In both cases, an amending regulation has to be placed there. In a sense, if banking had been left out, as the discussion went this morning, we could be left with a situation in which Hydro would come back and say, "We have a problem, will you please amend the regulation?" and the government would have to respond in some way to that.

All these provisions do is contemplate that event possibly occurring. If you are concerned, as I think some members of the committee are, that Hydro may not meet its limit, then I suggest the banking provisions are entirely suitable, but some toughening up of the process under which the provisions are used would be the appropriate way to go. As I understand, the minister said at the beginning that is what he may wish to hear.

Mr. G. I. Miller: Have you observed how effectively the scrubbers are working at Lakeview? How many months has that been in operation?

Mr. Endicott: I am not an engineer and I am not familiar in detail with it. I think it has been in operation for about half a year.

Mr. G. I. Miller: Is the ministry watching that closely? Are you observing how that is working?

Mr. Endicott: I am not in a good position to respond because I am not expert at all in that area, but there are people in the ministry who have been involved with watching it and seeing how it is working.

Mr. Chairman: I believe Mr. Endicott's specialty is in the abatement policy co-ordination.

Mr. McLean: Does Hydro have to make application to withdraw credits?

Mr. Endicott: Yes.

Mr. McLean: Why would it not be possible to have it apply for a regulation change if it had used up all the credits, if it never had any credits, if we did not have the banking system? Suppose we did not have the banking system and it was running into a problem. Why could it not then apply through the regulations for a five-month or six-month extension of the regulations because there was more pollution than before, the same way it applies to withdraw credits? Why have the banking system at all?

Mr. Endicott: The answer is one ought to create, realistically, a regulation that will not require the unexpected to occur. I hear myself sounding almost like Ontario Hydro, which is an unusual role for me perhaps.

I believe that if you look at the history in the United States of environmental movement versus the polluters, you see instances in their experience, as there have been in Ontario, where some big polluter has come back and said, "We want an extension in time," under the American system, or "We want a rollback" as has been done in Ontario. The reaction is rather hot and heavy between the two sides.

The environmentalists, generally, have been saying, "Look, you guys are just backing off in the face of this." Whether or not the overall improvements are being made and whether or not this really is just a minor exception, a lot of fur flies. There is not a great deal of advantage to that if you make sure your total control of pollution is sufficient. That is what I hope our program is aiming at, and those little variations around the edges can cause a great deal of trouble without making much difference to the fish in the lake. That is what we are after.

Mr. McLean: Do you think the negotiations that went on between yourselves and Hydro, the levels at which you set the limits, were with regard to a banking system, that you allowed that certain level?

Mr. Endicott: Yes, certainly, it had an effect. By allowing the flexibility to Hydro, the ministry was, if you like, sawing off against a tighter regulation, and I am sure Hydro and the ministry recognized that.

Mr. McLean: I have had some feeling that Hydro cannot meet the regulations to which it agreed. If it has no credits, what happens then?

Mr. Endicott: No, that is not my feeling. Certainly, it is not what it has said.

Mr. McLean: What happens if it does not meet that, if it has used up all the credit?

Mrs. Grier: Forward averaging.

Mr. McLean: No, if it has used them all.

Mrs. Grier: It can forward them too.

Mr. McLean: If it has used them all up, it has no credits left and it is exceeding the levels that were agreed to, what do you do then?

Mr. Endicott: I hope you do something before you reach that point.

Mr. Chairman: It sounds as if you should really turn off the switch.

Mr. Pouliot: It sounds like what I hear every day in the House. We can all do better than that.

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Mr. Endicott: There is a built-in provision in that as long as there is a credit there, it is using it up. You can see it going. It has to apply for it. It has to justify it. It has to say: "We expect this need will be over at such and such a date. We expect there will be so many tonnes exceedence." So we know what is going on.

Mr. McLean: I am not sure you have answered the question yet, though.

Mr. Endicott: I am not sure it is my job. It seems to me it would be the job of the members of the Legislature at that time to raise hell with the government of the day to make sure that Hydro was in fact doing something about that situation and to make sure that it does not just go on. You are talking not so much--

Mr. McLean: In the Ministry of the Environment, what are you going to do to penalize them, or what are you going to do to make something happen?

Mr. Endicott: What we have done to make it happen is to set up a situation where everybody knows exactly what is happening. It is up front in the public record and there is regular reporting. It is then somebody else's job in some other place to put on the requisite pressure. That is my view of it.

Mrs. Grier: In response to one of Mr. McLean's questions, you said it would be up to the members of the Legislature to kick up a fuss. I do not see anywhere in the mechanisms that you have envisaged any opportunity for us to kick up a fuss. Nowhere is public review built in of the 1988 submissions from Hydro as to how this thing is going to work or of any emergency that might occur after that date when Hydro comes to you and asks for permission to violate the standards.

Mr. Endicott: That is true. There is nothing in the regulation that says that. There is a statement in the original Countdown Acid Rain program to the effect that public consultations will be held, 13 months later perhaps, but this is it for the moment. There is nothing to prevent that from occurring.

Mr. Chairman: I suspect that it may be one of the recommendations this committee would make. Certainly, a committee of this nature has that responsibility as the program progresses.

Mr. McLean: Do you feel that the negotiations and the agreement that has been made are obtainable?

Mr. Endicott: Yes, because it is a matter of money. There are ways available to Hydro to meet the limits that have been imposed. It is a matter of money being spent to do it.

Mr. McLean: How many years do you think it will be before you know whether Hydro is on track or whether it is going to meet the negotiated agreement? I am afraid we are playing games here and that four years down the road it is going to realize all of a sudden that it cannot meet the criteria that have been laid down.

Mr. Endicott: So far, Hydro has been meeting the regulation as it is. The regulation for the smelters--not for Hydro--provides for regular reports every six months. Following a letter from the deputy, Hydro has agreed that it would supply a parallel six-monthly report. Hydro is under the limits and has done some things--in effect, it has reported twice so far. It is in the process of moving through the first stages of its environmental assessment for its scrubbers.

As I read it, things are on track, given that it is a fairly short time into it. That is how I read it, and there is no reason Hydro cannot meet that limit.

Mr. Pouliot: After Darlington units 3 and 4, there is not much money left, but it is a matter of money. You are right in terms of the urgency. When it starts punching holes into people, then we will do something. We know that.

Are there any provisions at present that you may be aware of or that may be forthcoming should technology improve substantially? Are there any provisions to amend the proposals?

Mr. Endicott: In terms of the limits?

Mr. Pouliot: I am sorry. I want to focus on the time stipulation as opposed to the limits. But now that you mention the limits, it may be twofold, the limits as well.

Mr. Endicott: Speeding up the process and making it more stringent. There is nothing in the regulation to say that. That is really all I can answer, but there would certainly be a lot of pressure from all kinds of quarters if that occurred.

Mr. Pouliot: Hope for the best goodwill kind of thing? We feel it needs to be tightened up.

Mr. Endicott: All right. Just offhand, I cannot think of how you would word that in a regulation, because you would have to say something like, "In the event that new technology comes along and can produce the same effect at a lesser price or a sooner time, then it would be examined." It is not much of a regulation.

Mr. Griffith: I do not have a formal presentation today. What I thought was required of me was to bring down information and expansion of some of the areas of my presentation last week. I have with me that information, which includes some cost estimates that were put together not only for Inco and Falconbridge, but also for the other smelters in eastern Canada. This was some work done in conjunction with the federal government and the provinces and probably represents one of the best estimates available to date as to what might be the costs and some of the other implications of the various technologies and process changes that this group of experts felt were the most feasible routes to go at that time.

I would like to submit this information, the cost information, some reports on the screening model I discussed earlier and an expansion, the information on the economic effects on the recreation and tourism industry in Ontario, as well as the amenity value survey, which I also discussed last week.

Mr. Chairman: Do you have copies of the documents you mentioned?

Mr. Griffith: I am sorry?

Mr. Chairman: The first document you mentioned. Is it in the package? The one in your right hand.

Mr. Griffith: This one? Yes. This is a Xerox from a report that was put together and actually published by the federal Department of Energy, Mines and Resources. This information was compiled in consultation with the provinces and the companies and provides estimates of capital costs and operating costs for the various smelters in eastern Canada, which include Inco and Falconbridge.

Mr. Chairman: We do not have a copy of that just yet?

Mr. Griffith: No.

Mr. Chairman: There are some there?

Mr. Griffith: I brought that down today.

Mrs. Grier: What date is that?

Mr. Griffith: This was done in 1983-84.

Mrs. Grier: Is that part of the Inco-Falconbridge task force report?

Mr. Griffith: No, it is not. It is different from that.

Mr. Chairman: If we might have copies of that, we will pass them around to the committee.

Mr. Griffith: I will also entertain any questions. I also brought with me a cold this time, so you will have to bear with me.

Mr. Chairman: I do recall that when you were last here, there were suggestions from members of the committee that they would be interested in some socioeconomic data. I hope the members who raised those questions are here to ask them of you again. Mr. Neufeld has a question.

Mr. Neufeld: Experience in the United States has shown that considerable cost savings can be achieved through the use of this whole concept of trading emission rights. I am wondering what benefits the ministry sees in using some form of emission trading rights scheme for sulphur dioxide emitters in Ontario. Do you see some benefits in adapting some form of emission trading scheme for Ontario?

Mr. Griffith: Are you asking me personally?

Mr. Neufeld: I am addressing you as a representative of the ministry.

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Mr. Griffith: We have examined the notion of tradable emission rights in the bubble concept in Ontario. We have done a number of studies and had studies commissioned for us several years ago, looking at this concept. There do appear to be some benefits. It is simply one mechanism of a whole menu of mechanisms that could be applied to complement the regulatory approach.

All the mechanisms have advantages and disadvantages associated with them. As you are aware, to date, none of those mechanisms have been applied in Ontario. We also looked at them on a national basis in terms of eastern Canada when we were looking at a strategy for the country. At that time as well, the decision was made that those mechanisms were not particularly appropriate at this time.

Mr. Neufeld: Do you have estimates of what kinds of savings we might achieve if a least-cost abatement strategy was used in Ontario? I guess about four years ago the ministry did some work on this whole concept of least-cost abatement. If we applied that model to Ontario, theoretically, to use sort of a comparison with the Countdown Acid Rain program, I am wondering if you would

be able to comment on what would be the magnitude of cost savings we might realize under a least-cost strategy for Ontario as opposed to the Countdown Acid Rain program, which is more an emissions-driven strategy.

Mr. Griffith: It is my understanding the Countdown Acid Rain program was not emissions-driven; it was driven to achieve the 20-kilogram per hectare yearly environmental objective. That was the focus, and not simply to reach an emission objective. The target was always an environmental objective, and we would try to do the best we could to get down to whatever level we could in a least-cost fashion, recognizing as we did all along that Canada acting alone could not achieve the 20-kilogram per hectare deposition objective if we shut down every SO₂-emitting source in eastern Canada.

Mr. Neufeld: The committee might be interested to see the results, if it would be possible to dig out that screening model and run it, to see what kind of ball-park savings we might experience if we attempted to entertain that kind of program. I think it is appreciated that the kinds of costs savings and estimates that kind of model makes are ball-park figures, but it might provide us with at least a benchmark with which to compare the system that has been proposed.

Mr. Griffith: I can dig that information out from our files if you feel it would be useful in any way. Yes, I can get that information for you.

Mrs. Grier: I am not clear what Mr. Neufeld is asking for. Can you explain?

Mr. Chairman: Mr. Neufeld, can you explain it a little better for the committee?

Mr. Neufeld: A number of years ago, the ministry developed a model which, theoretically, would show us the cheapest way to achieve a certain target of pollution reduction. It is a theoretical model that is in contrast to a system where you just have 50 per cent reduction across the board. This says, theoretically, what is the cheapest way to do it? That may involve one of the polluters abating more than another. So it is a theoretical model which may be interesting to compare to the system we have in place.

The other thing I think the committee would find helpful is if you could provide some written comment on the cost estimates we do have for Hydro and Inco and Falconbridge. I guess you would have to rely on whatever has been published in the western Canadian coal task force and that kind of thing.

Essentially, it is just helping us to work through some of those numbers and helping us to identify what some of the assumptions were that went into these cost factors, so we could get a sense of what it might cost the province.

Mr. Griffith: I would be willing to do that, but as I mentioned in my presentation last week, the companies are now trying to develop what the costs will be when they identify what abatement technology or process change they are going to adopt to comply with the regulations, and I am not sure any more as to the appropriateness of the costs that were estimated over the past five or six years. It appears that in many cases the costs are coming down substantially from the original estimates. I am not sure how much weight anyone should put on the costs that were estimated. Regardless of how good they were two or three years ago, a number of things have changed. Again, I would caution anyone not to put too much weight at this time on the numbers that were estimated two or three years ago. We can certainly comment on what went into developing costs such as the ones I passed out today.

Mr. Chairmen: I notice Mrs. Marland asked you some questions when you were here before, and one of them was the effects on employment. You have indicated that there have been some studies done on the aquatic sector. I gather that information would be available in this document?

Mr. Griffith: Yes, it is.

Mrs. Grier: Following up on the question of costs, have you done estimates as to what it is going to cost Hydro? I do not know whether you were here this morning when we got their figure of \$5 billion as their estimate of what it would cost to put in abatement equipment. Has the ministry got its own figures as to what it originally thought or now thinks it might cost Hydro?

Mr. Griffith: I believe the ministry does, yes. I will check with my colleagues the engineers in the air resources branch. They are the people who are responsible for reviewing what comes in from Hydro in terms of technology and the associated costs.

Mrs. Grier: One of the things that struck me--and I do not know whether Mr. Griffith is the right person to ask. I have lost track of who should answer what question, so maybe it can be answered later. In the review, in the second set of reports, I was distressed at the comment that they had not had the ministry's comments on the first six monthly reports in time to build them into the second six monthly reports. That seems to me most unfortunate. Maybe it is not your job to explain how that happened. Promise me it will not happen again.

Mr. Scott: I can speak to that. The first review of the company reports was released by the ministry on December 17, interestingly enough, coincidental with the first anniversary of the regulations coming into place with the Countdown Acid Rain program. The process of actually determining what the government review should be, who should do it, which agency should review it and how to incorporate the myriad of interests and potential players into that process took some time to sort out.

The first reports are fairly straightforward. Essentially, the team we assembled for the first review was probably going to be the one that would handle the technical review of the most sophisticated final documents. Putting that team into place took a little bit of time, in addition to generating graphs and sending it to committees that decided it was not strictly a Ministry of the Environment report, there were other ministries that had roles to play and concerns in them. All those things took time.

Last and probably most important was a recognition that the document was not, in its truest sense, a formal review of the company reports, but rather a public document that would be widely distributed throughout North America, principally through our contacts in the United States. We would make sure our friends and even our opponents, perhaps, in the United States would benefit from receiving the document.

Out of necessity, this process of assembling, compiling, collecting, reviewing and approving took considerable time for the first report.

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The companies had the document on December 17. With Christmas, the January break and the length of time it takes for them to prepare their documents, they were not in a position to incorporate a full review of the

points raised by the government, incorporate them into their reports and have them printed, distributed and delivered to the government by December 31. We felt it was important to note in the second report that the companies and Ontario Hydro wished to respond to the comments in the first place but, due to circumstances, did not have an appropriate lead time to incorporate those things into it fully.

I think our performance the second time around was a little bit better in that the report was released today, albeit not in the nice grey cover with the countdown clock advanced a little bit further on the front, but it was released today, having been received by the ministry at the end of January. That is just a little over a month. That is not too bad.

Mrs. Grier: I never noticed the clock. All that public relations and drafting effort totally passed me by.

Mr. Scott: I took the opportunity today to bring your attention to the clock.

Mrs. Grier: I am sorry.

Mr. Chairman: We are counting down.

Mrs. Grier: If they had done it in red, I would have noticed.

Mr. Scott: Definitely.

Mrs. Grier: Can I pursue that line of questioning or do you have a whole list of other people?

Mr. Chairman: On the subject of red?

Mrs. Grier: No, forget the red. I am bored with red.

Mr. Chairman: Mr. Griffith, I think there are no further questions with respect to your area of expertise, but I notice there are some answers which the researcher would ask you to supply us later on.

Mr. Scott: With your scheduling as tight as it is, I believe Mr. Griffith will merely respond, provide the detailed information back to you and, if need be, you may then make arrangements to have him come and speak without a special session.

Mr. Chairman: I think that will be sufficient, Mr. Scott. That being the case, Mr. Griffith, I guess the committee should be moving on to Dr. Misra. However, perhaps Mrs. Grier has a question of Mr. Scott.

Mrs. Grier: If I might follow the format in which the reports take place, can I pursue what you envision happening or what you see yourself receiving at the end of 1988? You heard Hydro in response to my questions today. As I understood it, Hydro is going to give you a whole lot of options with the advantages and disadvantages of all those options, from western coal to limestone injection to scrubbers. Is that what you see yourself getting?

Mr. Scott: And an indication as to which options it is going to use in order to meet the objective.

Mrs. Grier: Where does the decision lie as to which option to use?

Mr. Scott: It will be proposing to the government the options it proposes to use to meet the numbers. That is a requirement of the report.

Mrs. Grier: Okay, but do you see yourself having from it an explanation of the alternative options? Are you going to have a range of options with its preferred option identified or are you just going to get from it, "Here is how we see it happening"?

Mr. Scott: I think what it will be doing is providing the details of all the options it has investigated, documenting the ones it has excluded for the time being and indicating the ones it proposes to select.

I think also, realistically, it will be building into its program other possible variations that suggest that if there is a technological improvement in a discarded technology between now and the time that we complete our environmental assessment process, for example, it would propose to substitute one technology that was discarded with a new technology and replace one of the options and move forward.

What it plans to do is to deliver a program that will meet the regulations. That is what we are expecting to receive. It will also indicate some areas where it will propose to change that program if it can do it better and cheaper. Those things will be built in as well.

Mrs. Grier: Given the lead times that we talked about this morning and the environmental assessment process, my worry is that you will be prepared to know how you are going to respond and have a process in place for the public consultation around that 1988 report, and not take a year to come back and say, "This is how we are going to handle it."

Mr. Scott: When we start to discuss how much time we will provide or make available for public consultation, that will be an area particularly fraught with danger. I believe the direction I would receive from my political masters would be to make sure there is adequate--

Mrs. Grier: They may be mistresses by then.

Mr. Scott: Yes, I believe "master" is not particularly generic. The politicians in charge will be providing indication in terms of how to go about obtaining input, the nature of that, whether there will be hearings, meetings or mail-ins or what the review will be, whether there will be experts hired on behalf of interest groups to do the review for them or whatever. Those things would be built in.

What we have to keep in mind is that the environmental assessment process that Ontario Hydro has initiated is in fact looking at one of the options it is moving forward with. It is the scrubber component. Some of the other options will not require Ontario Hydro to do an environmental assessment. Additional coal washing, cleaning or an improvement of the qualities of the coal they are using, coal switching, fuel switching and development of different technology are all things that will be in the package as well.

Mrs. Grier: And which could happen faster than the scrubbers if they were the option chosen.

Mr. Scott: Certainly. Ontario Hydro has indicated it has switched coal. It is constantly making alterations to its coal blends and improvements in those areas.

Mrs. Grier: When you get those reports, what happens if they are pessimistic or if Hydro or any of the other participants report at the end of 1988 that they do not think they can meet the objectives of the regulations?

Mr. Scott: I hesitate to speculate, because to the best of our knowledge the technology exists to do it now. I can only say we will have learned something in the meantime that will cause us to have to set aside the best opinion we are getting now from government experts and from experts outside Canada about the availability and practicability of the technology.

If some of that changes, conceivably Hydro could come forward with a negative report, but at this time the technology is there, and it is a matter of optimizing that. We are hoping Hydro will bring forward an optimized existing technology that will meet the numbers.

Mrs. Grier: It has been very clear as we have learned more about this regulation that it is very much the product of a negotiation. One of the questions that was raised by other witnesses before this committee has been whether charges will be laid if the regulation is exceeded in the interim period and what happens if one of the participants cannot meet it by such and such a year and exceeds it. What options are open to the ministry then?

Mr. Scott: Certainly the option of prosecution, enforcement.

Mrs. Grier: That is not precluded?

Mr. Scott: Certainly not. The regulations are the basis for the prosecution. The numbers are fixed. They are in place and they are law. They must be met. There is no provision for not meeting this built into the regulation at this time.

Mrs. Grier: So that amending the regulation to accommodate--

Mr. Scott: The banking, for example.

Mrs. Grier: You are saying that is not an option. You do not foresee an amendment to the regulation.

Mr. Scott: The way you stated your question was that if the level is exceeded, then what are the options? If the level is exceeded, the option is to prosecute, because clearly at that point you are in violation. If you change the law after you have a violation, you have not made it legal. You have merely said that from the time the new law came into place, the new law was in place. In the time between the two laws there may still be a number of exceedences of the law.

Mrs. Grier: The only eventuality where you would foresee the regulation being exceeded is in the banking provision for Hydro.

Mr. Scott: At this point in time, the way the regulation is written is that there are no provisions to exceed the regulation. To withdraw from the bank requires amending the regulation in support of that.

Mr. McLean: What would happen to Hydro if it did withdraw everything? What would you do?

Mr. Scott: If Hydro received authorization for a withdrawal, it would have a legal authorization for a withdrawal. It would not be in violation of the law.

Mrs. Grier: It would have been allowed to break the law.

Mr. Scott: The government would have allowed it to change the number, and as such Hydro would be in compliance with the law at that time.

Mr. Neufeld: One of our witnesses yesterday indicated that there are, at least theoretically, various economic incentives you could put forward for various industries to comply and which would make it in their best interests to obtain the limits that have been set. I am not sure if it would be more appropriate for the minister to respond to this. Is the ministry contemplating use of things such as surety bonds, for example, as one mechanism of ensuring compliance on these four major emitters, or some other economic scheme, such as effluent charges or something like that?

1530

Mr. Scott: In the broad sense, I think, as Mr. Griffin indicated, those are options that have been considered as the review of all the options is undertaken when you are looking at specific programs. But when the countdown program was put in place, we have not had formal discussions within the ministry to evaluate whether we need to add surety bonds or anything else on top.

I guess the answer to your question is, not at this time. We could discuss further the advantages and disadvantages.

Mr. Chairman: Mrs. Grier?

Mrs. Grier: Fine, thank you.

Mr. Chairman: Thank you very much, Mr. Scott. Dr. Misra, thank you very much for appearing before us to lead us through the modelling data which have been provided to us in your package. I guess Mr. Shenfeld is also here to answer questions in that respect. I will turn over to you, Dr. Misra, to lead us through the various scenarios.

Dr. Misra: I do have a revision to the tables that Mr. Scott was alluding to earlier in the meeting. What I would like to do is to describe briefly the model we have used to arrive at these numbers and afterwards perhaps go over this document that is being distributed right now and explain what is in it.

I have a few diagrams. I would like to go over to them.

Mr. Chairman: Perhaps you could use this chair right here, Dr. Misra, unless we have a tie mike--no, we do not. We need to have you close to the mike so we can pick up your speaking on it.

Mr. Scott: If I might clarify, the document Dr. Misra has provided merely replaces the one with the green cover that lists the emission scenario deposition results for boundary waters in Algoma, Muskoka, etc. All the rest of the package with the green covers remains, and you may use it at your leisure later.

Mr. Chairman: It just replaces the--

Mr. Scott: If you would just recycle this document with the cover page, the new one does not have a cover page on it. It is the simple white package with the clip in the corner.

Mr. D. R. Cooke: Are these documents or are they updates?

Mr. Scott: The white one corrects the errors.

Dr. Misra: The model we have used to arrive at these numbers is called a long-range transport model of a statistical nature, and the way it works is briefly explained as follows. If we imagine a stack emitting sulphur dioxide, and if we imagine the amount of sulphur dioxide that is coming out, say, within a time period of one to two hours, this amount of sulphur dioxide is either coming out in a dry phase when there is no precipitation or in a wet phase when there is precipitation. The portion that comes out in a dry phase can at a later time get into a precipitation event, therefore a wet phase, and similarly, the proportion comes out in the wet phase can also be converted to a dry phase.

We express these conversions mathematically in a statistical sense, taking into account the weather pattern, the meteorology of a long-term nature, whatever happens over a time period of, say, five to 10 years. With those numbers, we express the conversions of these dry parcels to the wet parcels and vice versa. We also take into account the chemical conversion that takes place to convert the sulphur dioxide to sulphate, which eventually comes down to the surface in the form of dry depositions or wet depositions. Sulphur dioxide also can be deposited to the surface in the same way, either by dry depositions or by wet depositions, although sulphur dioxide in the wet deposition process gets converted to sulphate.

These are basically the principles of the model we have used to arrive at these numbers. In essence, what happens is that if we know what the emission levels are and where these emissions are coming out, if we know where the latitudes or longitudes are and if we know where the receptors are in terms of the latitude and longitude, we can compute the amount of depositions that can be attributed to a given source in relation to a given receptor.

To give you an example of the emission inventory we have used in this model, there are thousands and thousands of sources in the northeastern United States and Canada that we have to take into account to compute the depositions of the different receptors. This viewgraph shows the sizes of the receptors and their distributions in the northeastern portions of the United States and in Canada.

To compute the contributions of a given source, say Sudbury, to a receptor, say Muskoka, we eliminate the rest of the sources, keep Sudbury in the model, run the model, compute the depositions and compare those to the total the model produces when you have all the sources included in the model. The tables that have been created reflect that ratio, the proportionate contributions from different sources to different receptors.

In formulating a model of this type we have to make a lot of assumptions. We have to make assumptions on the way the meteorology behaves in the long term, on the way the chemistry of atmosphere is represented in the model to convert the sulphur dioxide to sulphate and on the way the dry depositions and the wet depositions take place. This inevitably creates some error in the model results. What we do as a rule is to compare these model results to the observed values at different receptors or different observation points.

What we have done for applications in this scenario study is to scale the model results in relation to the observed values at this point, so the

overall error is not that serious when you do the scenario study. What I am showing here in the last column are the scaling factors we have used for different receptors to arrive at the numbers to use in the scenario study. Here is an example of the scenario studies in relation to the different receptors that appear in the tables.

This diagram over here shows the distribution of the contribution of various sources--and the sources are indicated in the margin here--for different types of scenarios. Scenario A is simply the base case. There is no change in emissions there, the emissions we obtained for 1980. Scenario B is what happens when only the Ontario sources are reduced as per the 1994 Countdown Acid Rain reductions. Scenario C includes not only the Ontario reductions but also reductions to an amount of 12 million short tons, distributed in 31 eastern states of the United States and targeted only to the power plants. In other words, only the power plants are reduced, and they are reduced uniformly by the states.

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Also in scenario C, we have some reductions in other provinces in Canada, although the Manitoba emissions have somewhat increased. In the same way, we have the results for different receptors, Algoma, southwest Quebec, Muskoka and the Adirondacks. We have in the package similar distributions for other receptors in Canada and the United States and a diagram showing the locations of these receptors in both countries.

Mrs. Grier: Could I have an explanation of what the other sources might be?

Dr. Misra: In the emission inventory, we have tried to include all the known sources we can take an inventory of. In addition, there are biogenic sources, which are natural sources produced from natural phenomena, and some sources we have not been able to account for in the emission inventory. The contributions of that have been estimated, based on empirical estimations and analysis of the data in Europe and the United States, and we have used that as a fixed amount to each receptor, a contribution from these biogenic sources as well as sources we have not been able to put in the inventory.

Mrs. Grier: Your Canadian sources are essentially your point sources, not auto emissions or ones you cannot directly calculate?

Dr. Misra: No. We have in our inventory point sources as well as area sources. Area sources include emissions from home heating and other source of emissions that are not point sources.

Mr. Scott: I would like to point out one small thing. When you are looking at the bar graphs on the figure, please make sure you actually compare the numbers on the side, because although the bar graphs are all shown at the same size, the scale for each of them is slightly different.

Mrs. Grier: I cannot read the numbers, even with my glasses.

Dr. Misra: It was very difficult for us to put all that information in a small diagram like this, so we also have included an enlarged version of each of these bar graphs with the tables to facilitate reading the scales.

Mrs. Grier: Right at the end.

Mr. Scott: It is appended, yes. For example, in the boundary waters number, although the figure on the left-hand side of the page occupies the full table, the scale on the left side goes up to 7, as compared to the other scales that are much greater than 7.

Mrs. Grier: I was going to ask why the Canadian contribution was so much bigger than Quebec south. That is because the scale is different?

Mr. Scott: That is correct.

Mr. Shenfeld: In answer to your question on the background, there is a global sulphur in the air, circulating around the globe, that is considered in this background.

Mr. D. R. Cooke: What do those numbers on the left side of the charts mean?

Dr. Misra: Excuse me?

Mrs. Grier: That is the deposition.

Mr. Shenfeld: The deposition.

Mr. Chairman: The question is, what is the significance of the numbers on the left-hand side?

Dr. Misra: These are the wet depositions of sulphur expressed in terms of so many kilograms of sulphate per hectare per year at the receptor.

Mrs. Grier: Is that the same scale as the figure 20?

Dr. Misra: Right. Those numbers should be compared to the figure 20.

Mr. D. R. Cooke: How has the global sulphur varied since the start of the Industrial Revolution?

Mr. Shenfeld: I do not know. I have not got that in the back of my mind. I am sorry; I cannot answer that.

Dr. Misra: It does vary, but I suspect it probably does not vary as greatly as that for the new sources.

Mr. Chairman: I might mention while the other slide is being brought up that we may just have to proceed with the presentation. Tomorrow morning I suspect Dr. Misra and Mr. Shenfeld will be back, and we can have a full discussion of any questions that may arise from the presentation. Before we begin, I think the minister is going to be here first thing in the morning.

Mr. Scott: Yes. I hope he could proceed on schedule because he has other commitments as well.

Mr. Chairman: I am not sure how long the presentation will take, but just watching the clock--

Dr. Misra: That is all, except for any interest you might have. I can explain something about the factors we just presented.

Mr. Shenfeld: Mine is very brief too.

Mr. Scott: Perhaps Mr. Shenfeld could go, because I think some of the questions are going to flip back and forth between the two. Maybe if the committee members are aware of the subtle differences, then that might help to eliminate even some of those questions.

Mr. Shenfeld: Mr. Scott asked me to show you briefly what would happen if emissions from Lakeview generating station were increased. Rather than modelling this, we decided we would look at past data--1971 and 1972 data--when the emissions of SO_2 were quite a bit greater than they were in the last two years.

There is a lot of SO_2 emitted in Metro Toronto, so we decided to look at three stations on the western boundary.

Mr. Chairman: Mr. Shenfeld, I will probably have to ask you to be a little closer to the mike in front of you so that it can pick you up.

Mr. Shenfeld: Thank you. The three stations are at the intersection of Evans Avenue and Arnold Avenue, 35033; Queensway General Hospital, 35005; and Elmcrest Road in Etobicoke, 35003. Lakeview generating station is located on the lake.

Mrs. Grier: And I live just between the first two.

Mr. Shenfeld: We have three criteria for SO_2 . One is based on the annual average of 0.02 parts per million SO_2 . The SO_2 levels exceeded 0.02 ppm in 1971. This is at the Evans-Arnold Avenue station. It just barely was met in 1972, but now in 1984 or in the last several years we have been well below 0.02 ppm. We have been below 0.01 ppm, running pretty close to 0.005 or 0.004 ppm.

Mrs. Grier: That is right beside the Queen Elizabeth Way. How much of that do you attribute to automobile emissions?

Mr. Shenfeld: By the way, you asked about automobile emissions. There is very little SO_2 emitted by automobiles. There is a little sulphur in gasoline, but it is very little and it has a very small impact compared with other sources.

Queensway General Hospital shows an exceedence of the annual standard in 1971. It was met in 1972, but again in 1984-85 was well below the criterion.

The third station, Elmcrest Road, which is further away, did meet the criterion throughout all the years. Being further away from Lakeview generating station, it has a better chance. The highest level recorded was 0.015 ppm.

1550

We do have standards on short-terms, as you might know, based on hourly and 24-hourly daily averages. The hourly criterion is 0.25 ppm, and the 24-hourly or daily standard is 0.1 ppm. In this slide are shown the numbers of hours and days that these criteria were exceeded over the years. Where there is no bar there is a zero, and there were no exceedences. So we did have six exceedences of the one hour--six hours of 8,770 hours--in 1971 and two hours in 1972, and there was one day in 1971 that the 24-hourly average was exceeded.

Mr. Wiseman: In the slide you had before, they all gradually went

down. On the last one, there seemed to be a slight increase in 1985 on the graph.

Mr. Shenfeld: That is a very small change from 0.006 to 0.007.

Mr. Wiseman: Yes, I know, but all but that one gradually came down.

Mr. Shenfeld: By virtue of changes in weather, we get slight fluctuations. There really has not been very large amounts of control between those two years so that, actually, these are really weather-controlled rather than emission-controlled.

Mr. G. I. Miller: How do you account for the drastic change in 1971? What was the change in rate?

Mr. Shenfeld: The reduction in emissions.

Mr. G. I. Miller: From Lakeview?

Mr. Shenfeld: From Lakeview. There are other sources as well. We should not attribute the entire improvement to the Lakeview generating station, but it is by far the largest emitter.

Mr. G. I. Miller: Was it running full out at that time and was it because there was a cutback in the use of Lakeview?

Mr. Shenfeld: Lakeview generating station was operated much more then because Hydro did not have the other plants in operation. The nuclear plants were not in as yet. Fossil fuel is not used as much now as it was in the past.

Mr. G. I. Miller: So it is the capacity of the plant. It is operating at a lesser percentage.

Mr. Shenfeld: The sulphur content in the fuel was around two per cent. At the beginning of 1975--actually December 31, 1974--we demanded that Lakeview control its emissions by virtue of the hourly or daily weather conditions, on top of the limit of SO₂ from the sulphur in the coal. So Hydro had to control its operation of the plant. In fact, on an hourly basis, it controlled the operation of the three power plants--Lakeview, Lambton and Nanticoke--based on weather.

Mr. Wiseman: Back in 1971, it was probably running 365 days of the year or something close to that.

Mr. Shenfeld: No, the plants never run full out.

Mr. Wiseman: We heard the other day in our visit that from September, it runs maybe six months of the year. It is not running full-out, but it is running to pick up the slack in the winter and one thing and another. Would that be why? Are we seeing a real change in corrective measures, or are we just seeing it because something like Falconbridge is running at a lower level? It makes them look even better because they are running at maybe only half or a lower percentage than full out.

Mr. Shenfeld: Yes.

Mr. Scott: Can I just clarify this? The reason for picking the two

years was that in 1972, Lakeview emitted about 100,000 tonnes more SO₂ than it did in 1985. In 1971, it emitted about 184,000 tonnes of SO₂, or something like that, so its emissions at that time were much higher than they are now. We are not attempting to demonstrate that anything is different between those two situations except that one represents higher emissions than the other.

Mr. Wiseman: If you averaged it over a year, it would end up bringing it down.

Mr. Scott: The important point is that there is a greater impact on air quality around Lakeview, based on what happens on a day-to-day basis at that station than based on how many tonnes it puts out over the whole year. You have identified the important point; that is, as far as the total environment in Ontario is concerned, total tonnes emitted from all sources over the whole year are more important than how much is emitted on any one day.

When you are talking to the people who live immediately adjacent to a power plant, Inco or whatever, there are two concerns. There is the local, immediate concern, which we are talking about here, and as Dr. Misra has pointed out, there is a long-range component, an acid rain concern. That is the one where we are looking at these differences in how much drops all across the province, based on what is coming from the United States and other places in Canada, what is floating up there in the global atmosphere and our contribution from Ontario. There is quite a difference.

Mr. Wiseman: What would be the average on any given day?

Mr. Shenfeld: That is an annual average. I was just giving you the frequency of the times they have exceeded a daily average reading of 0.10 parts per million. It shows that at that station there were five days that 0.10 was exceeded. I have not given you how high it went on those five days. I am just saying that to us any day of exceedence is an undesirable situation.

What we have done is actually control Ontario Hydro's program, so these exceedences do not occur. By the way, they do occur at times, but we try to limit the number of occurrences to the greatest degree possible by virtue of having them control their emissions or control the operation of a power plant. Whenever the winds are blowing off the lake and there is an inversion situation, they must control their operation of that particular power plant and bring their power from some other location. We do that on top of the control we instituted on acid rain.

Mrs. Grier: Was not Mr. Wiseman's point that in your graph of how much they were emitting in 1984 and 1985, they were only operating 10 per cent of the time, as opposed to 60 per cent of the time in 1971 and 1972?

Mr. Shenfeld: That is right.

Mr. Wiseman: Your graph would not look so good if it was 100 per cent.

Mrs. Grier: That is right. If they were operating at 60 per cent in 1984 and 1985, there would not be any difference.

Mr. Shenfeld: There would be some difference in the frequency of exceeding hourly and 24-hour averages, because we started that in 1974.

Mr. Wiseman: As Mrs. Grier was saying, I did not want to let the people down there think there was a big change. It is only because they have cut back on their operations.

Mrs. Grier: They have not installed anything to make the emissions better. They have just cut back on the amount of time they operate.

Mr. Wiseman: That is right.

Mr. Shenfeld: They do not need the plant that much.

This is the Queensway General Hospital, a very appropriate place to monitor, by the way, because sick people, of course, are most sensitive to sulphur dioxide and particulate matter. The number of hours in 1971 was eight, and the number of days was one. In 1972, we had one hour, and there were no days when the SO₂ limit was exceeded.

With the third station, we have a little bit of a difference in how the trend was showing before; 1971 was actually better than 1972. All these differences show up mainly because of weather differences. That is 1984. We had one exceedence of the hourly criteria in 1985.

Mr. Wiseman: Perhaps I should know, but are all these coal-fired? In the case of the hospital, is it a coal-fired boiler?

Mr. Shenfeld: I do not think the hospital is coal-fired.

Mr. Wiseman: Would it be gas, oil or something?

Mr. Shenfeld: I am pretty sure it is.

Mrs. Grier: I think it is natural gas.

Mr. Wiseman: I always thought natural gas was about the cleanest fuel you could find.

Mr. Shenfeld: This is not attributed to the Queensway hospital.

Mrs. Grier: They are saying these emissions come from Lakeview.

Mr. Shenfeld: No, no. This is not attributed to Queensway hospital. This was a monitoring station at the hospital.

Mrs. Grier: All the dirt is from Lakeview. The monitoring station is at the hospital.

Mr. Chairman: Would the committee like to have copies of those slides so they can take them to the Queensway hospital?

Mr. Scott: We can probably leave you the overheads. They will photocopy.

Mr. Chairman: Thank you very much.

Are there any questions from the committee to Dr. Misra or Mr. Shenfeld? If not, thank you both very much for appearing today. Mr. Scott will be back tomorrow morning.

Mrs. Grier: I am concerned about tomorrow morning. Mr. Scott said the Minister of the Environment (Mr. Bradley) had some time constraints.

Mr. Scott: No. I wanted to make certain we were not going to load up the front end and have him sit and wait. He has booked the time that he is to be here and he has booked sufficient time to answer questions but not necessarily to be backed up four or five hours if we got into something.

Mr. Chairman: As I understand it, the minister will be here for a substantial period. However, later in the morning, there will be an opportunity, if there are any questions of any other ministry officials such as Mr. Scott, to ask them subsequent to the minister.

Mr. Scott: Mr. Chairman, may I right now give my apologies? I will not be available tomorrow at the session, but if committee members have any wishes after the minister appears or at that time, if they direct them to my office, we will make sure the documents are prepared and forwarded to the committee.

Mr. Chairman: Thank you, Mr. Scott and members of the committee. We are adjourned until tomorrow morning at 10 o'clock.

The committee adjourned at 4:02 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, MARCH 12, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

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VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
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Substitutions:

Cooke, D. R. (Kitchener L) for Mr. Henderson
Lupusella, A. (Dovercourt L) for Mr. G. I. Miller
McLean, A. K. (Simcoe East PC) for Mr. Eves
Pouliot, G. (Lake Nipigon NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ministry of the Environment:

Bradley, Hon. J. J., Minister of the Environment (St. Catharines L)
McLeod, R. M., Deputy Minister

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, March 12, 1987

The committee met at 10:07 a.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: I hope and trust everybody is ready this morning for a very illuminating session. We have with us the Minister of the Environment (Mr. Bradley). Welcome. Do you have any opening remarks you would like to make?

Hon. Mr. Bradley: I happen to have opening remarks. Do we have a number of copies that we could distribute to the committee so that members can follow along this morning?

Mr. Chairman: They are already being distributed.

Hon. Mr. Bradley: Oh, they already have; so you will know if I make any mistakes. I will wait until everybody gets them.

Mr. Chairman: This handout has a revised clock setting on it.

Hon. Mr. Bradley: Okay, everybody has one.

This morning it is my pleasure to reappear before you to address your questions on our Countdown Acid Rain program. Before the first questions, I would like to take a few minutes to bring the committee up to date on what has been happening on the acid rain front in the two weeks since I provided my opening remarks at the start of your hearings.

First, on Tuesday morning of this week, in the media room just down the hall, the Honourable Tom McMillan and I signed an agreement on acid rain. It was a historic moment in the global war to control acid rain. That moment was enhanced by having Jeffrey Shearer, president of the Canadian Coalition On Acid Rain, and Dr. Harold Harvey, Canada's own father of acid rain research, present officially to witness our signatures.

Our new agreement provides the federal government with a formal reconfirmation that by 1994 Ontario will deliver even more of the Canadian SO₂ reduction than it undertook in 1985. As I mentioned two weeks ago, Ontario has limited its 1994 emissions to 885 kilotonnes, down 145 kilotonnes from the previous government's 1985 commitment of 1,030 kilotonnes. It also reaffirms for Inco Ltd., Falconbridge Ltd. and Algoma Steel Corp., Ltd. that federal funding of up to \$85 million and Ontario funding of up to \$85 million will be available, if required, to assist the companies to accelerate smelter modernization in those processes which will reduce SO₂ emission to levels that will be in compliance with our countdown limits.

Agreements have also been signed with Newfoundland and Prince Edward Island. Mr. McMillan indicated that a Quebec agreement would be signed on March 23 and that a Manitoba signing was also imminent. Having these signed acid rain agreements in hand will strengthen Prime Minister Mulroney's position when he meets with President Reagan in Ottawa on April 5 and 6.

But, as with a jigsaw puzzle, the smallest pieces become the most important pieces if they are missing. Right now, Canada is missing the New Brunswick and Nova Scotia pieces. Canadians and Americans are all too aware that New Brunswick and Nova Scotia have given the impression they are backing away from the promises they made on February 5, 1985. New Brunswick's share of the Canadian reduction is to reduce by 12 per cent from its 1980 base case. Nova Scotia's share of the reduction is to reduce by six per cent from its 1980 base case.

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At the signing, Mr. McMillan indicated that current ongoing federal efforts to get these two provinces on side in this issue were being intensified. Ontario has already offered to assist the federal government in the current 11th hour discussions with New Brunswick and Nova Scotia to get them back on side. Since your final report will be produced after the upcoming summit, I look forward to your suggestions on how Ontario should proceed vis-à-vis our sister provinces at that time. In the meantime, I hope we can get the Canadian team all suited up in time for the Prime Minister's summit with President Reagan.

I sincerely hope that in the next few days New Brunswick and Nova Scotia will decide to reaffirm their commitment to contributing their shares of the necessary emission cuts. This is not a matter where their reductions will solve the North American acid rain problem, but their participation is vital. Canada must have every team member in uniform as it goes into the next big matchup against the United States team on April 5 and 6. The US must know that Canada is unified and nonpartisan on this issue and backs up its words with action.

The committee members will recall that on February 5, 1985, the eastern Canadian provinces put their numbers for allocation of the 50 per cent on the table. Unfortunately, 319,000 tonnes were left unallocated. As the new Minister of Environment in the province responsible for approximately 50 per cent of the eastern provinces' 1980 base case SO₂ emissions, I felt Ontario had to take the lead and bite off a chunk of those unallocated emissions. Our bite was 145,000 tonnes over what the minister of the day, Mr. Brandt, had committed on February 5, 1985. That eastern provincial task will be even more difficult for all of us to achieve if one of the parties refuses to honour its earlier promises.

The second item I would like to mention is the expanded use of western Canadian low-sulphur coal by Ontario Hydro. On March 2, Canada's Deputy Prime Minister, the Honourable Mr. Mazankowski, met with the Premier to discuss this matter. By the way, I noted that the Prime Minister and the western Premiers who had a vital interest in it, as well as Premier Peterson, met again last night.

I am pleased to relay to you that the meeting went very well for all Canadians. Ontario confirmed that it remains committed to maintaining its purchases of western Canadian low-sulphur coal at current levels for the duration of the present contracts. We also agreed to be part of a team of involved players which will work with producers, transporters and so on as they improve the quality of their product and their competitiveness in getting it to markets in Ontario.

Mr. Mazankowski confirmed that his discussions with representatives of the various sectors of this industry made him confident they can make major

improvements over their current pricing and become competitive with coal from other regions. More competitive pricing will also mean other Ontario coal users may switch to lower-sulphur coal.

The third item I would like to discuss is the issue of the banking provisions for Ontario Hydro. I know these procedures in the Countdown Acid Rain regulation have been the subject of many questions and much thought by committee members. Advice and opinion have come from many of the witnesses. The question of the banking provisions is an important one. It is an issue of perception and trust.

Internationally, it is important our acid rain reduction program is seen to be beyond reproach by any reasonable person. Here in Canada and in Ontario, there seems to be an agreement that some flexibility is needed, and we must ensure that there is the greatest possible agreement on the exact mechanisms to be employed.

The select committee on the environment has an important role to play. It has been fulfilling the need for refinement of policy through public involvement, and I trust the committee's report will carry us further.

Regulation 662/85 provides that Ontario Hydro must report back on a proposed process for operating the bank by December 31, 1988. There appears to be some feeling that it would help Ontario to have the bank managing procedures available before the end of 1988. Since Ontario Hydro is very eager to retain the banking provisions of the regulation, I suspect it would voluntarily undertake to provide this report earlier than required in the regulation.

There are several other questions about the banking issue the committee might wish to consider, and I will look forward to reading this in your final report as you give me the appropriate advice. I ask these questions:

Should there be any banking provision at all?

Is there a better mechanism for dealing with unexpected events or technical breakdowns?

Should we leave the banking provisions more or less as they appear but limit withdrawals to a specified amount in any year?

Should there be a 20 per cent holdback to ensure that the environment makes even further gains if the bank is used, as is done in the US to control ambient air quality?

Should some form of economic penalties or incentives be used as an overlay to regulated emission limits, as suggested by Professor Dewees, for instance? Much background work on economic mechanisms has also been done within the ministry over the past several years, as I am sure members are aware.

Should all SO₂ emission banking rules and limitations be placed in a regulation of their own?

What is the best mechanism for a review of the banking rules and procedures if and when they have been established?

I must say I think we did a reasonable job in the fall of 1985 when we wrote the regulation. However, now we have more knowledge and information to work with. Today we have this committee to give us some guidance, and that is what I am seeking.

I am pleased that you are to be briefed on our countdown program as it is perceived in Ottawa, in Washington and in the United States. It is unusual for us to be more concerned about how what we do in Ontario will be perceived outside of Ontario, rather than in our province. In preparing your report, it would be most beneficial if the committee could focus, starting with the general and moving to the specific.

Since this is not a problem we can solve strictly with our own acid rain program, even with full Canadian action, perhaps the committee would offer its suggestions on how Ontario should address, first, the US scene, second, the Canadian scene as a whole and, third, the Ontario scene.

Let us look at the US scene for a second. Our first US issue is, how does Ontario influence the Americans to effect a control program? In my earlier presentation, I indicated we are taking the message directly to the American people, for instance, through our top-notch "combat acid rain" display at key US sportsmen's shows. The Premier and I have urged US elected and appointed officials to develop acid gas control programs. Should we be considering advertising in the US popular media? Are there other approaches we should evaluate? I would like the committee's thoughts on this.

Looking at the Canadian scene, I have mentioned that New Brunswick and Nova Scotia may be wavering from their 1985 commitment. Are there any particular avenues of influence we can use to make sure the Canadian agreement remains intact now and into the future?

Looking at the Ontario scene, aside from the Ontario Hydro banking provision, which I have discussed in some detail, does the committee have suggestions as to how we can best ensure compliance by the other three major sources? With respect to smaller sources, should we be following up on the possible use of economic incentives and penalties? Are there other improvements to be made?

Finally, I would like to thank the committee for its diligence, for its comprehensive questions to all the witnesses and, most important, for its nonpartisan approach on this matter. This is one war all of us in this room and in this province want to win. That is why all of us must work together as a team, unified in our resolve and strengthened in our determination to have the US clean up its act. This is not just to protect us specifically; it is designed to protect the American environment, the American economy, American trees and streams and lakes and wildlife and structures and the health of Americans and especially American children.

On the US administration's attitude against cleaning up acid rain, I would like to conclude by paraphrasing Robert Kennedy. This has been utilized on many occasions, and I put it in this context: President Reagan sees acid rain as it is and says, "Why clean it up?" We dream of a control program they should have and say, "Why not? And why not now?"

I would now be happy to entertain questions from the committee members and to introduce an individual who has appeared on many occasions before committees and various ministries, the Deputy Minister of the Environment, Rod McLeod. You will be aware that Mr. McLeod was deeply involved in the

negotiations with the major four companies that we were regulating, from the initial stages to the concluding stages, and would be willing to answer questions you might have. Mr. McLeod will introduce any ministry staff here who might be able to assist us if there are questions of a technical nature.

Mr. McLeod, do you have any comments before I get to questions?

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Mr. McLeod: I do not think so. The ministry staff here have been at the earlier proceedings. Unfortunately, Dr. Balsillie, the assistant deputy minister, who has been involved with me and others, is unable to be here this morning, and Wayne Scott, the acid rain co-ordinator, is not able to be here. I would be pleased to assist by way of answering any questions that are forthcoming.

Mr. Poirier: Right now, I am mostly worried about the US. We have a good part of our acid rain coming from the American sector, and I would like you to be able to tell us more about what you know. What can we do to convince the Americans, from an Ontario and even a Canadian perspective? I know you have raised some questions this morning, March 12. According to you, where do we stand?

Hon. Mr. Bradley: My evaluation is that--and I ask the committee for suggestions as well--despite the apparent reluctance of the administration to move significantly on acid rain control measures or to lend its support to any kind of significant legislation--I realise it has a division of powers that is not dissimilar to ours--there is considerable activity taking place in Congress. In March of last year, I went to Washington, New York and Pennsylvania.

When I was in Washington, I met with four members of the Senate and four members of the House of Representatives, plus administration officials, to put forward the Ontario case, it being a Canadian perspective. I found that there are some considerable allies there. While it is an old cliché for those of us who are politicians, the window of opportunity for legislation in the US is pretty good right now.

The issue of acid rain is getting more attention than in the past. One of the problems I perceive--and I am sure it is nothing new to any of us, except I experienced it firsthand--is that here in Canada, our media and people are extremely interested in this issue. When I was in Washington, the story of the day on television was, of course, whether there would be aid to the Contras. That was the focus of attention for the Congress, both the House and the Senate, for the administration and for the news media, understandably so because the US is a major world power that concerns itself with external affairs.

The opportunity to get the environment high on the agenda in terms of public attention in the US, on a national basis, is difficult. Whenever the summit is arranged between the Prime Minister of Canada and the President, if our Prime Minister places acid rain high on the agenda, as he has, that is very helpful because, at least for that period, there is attention paid to it.

Joe Clark met the Secretary of State yesterday in Washington, I think. That is helpful. I do not think he gained as much as the federal government would like to have had in the way of a concession from the US, but that kind of bilateral discussion is useful.

Somewhere along the line, this committee may wish to be in a position to exert its influence by being a group of legislators from three different parties. The key in the US is a bipartisan approach, which has been most successful. I have talked to both Republicans and Democrats committed to it, some of them with excellent bills. There are four major bills bouncing around now in the US Congress.

I happen to have the Ministry of the Environment post, so I am perhaps in a position to make those kind of speeches in the US, but for any other Canadian legislators, any of you who have the opportunity to be in the US, it is important to get that message across. It is important as well that we get all the provinces in line, as I indicated to the federal committee I appeared before. Certainly, I am very supportive of Tom McMillan in this.

At the press conference, if any of you had an opportunity to hear him, Mr. McMillan was very outspoken in his criticism of the two provinces he felt wanted to renege on the 1985 commitment. He was particularly concerned about New Brunswick and the 1985 commitment. He feels it is important that we should all be putting pressure on those provinces, and I certainly support him in that. Even though the amount of acid rain is not significant, it is the idea of having everybody on the team for the Prime Minister when he is meeting with the Americans that is important.

When you are from Ontario, the largest province, and your economy is doing pretty well, and you go down and start lecturing others on what they should be doing, it is not always popular. But I think we have to support the national government in this. We have to support Prime Minister Mulroney and Mr. McMillan in saying, "Yes, we are provinces who want to see it in line as well."

Our people in Ontario are saying: "Look, we are paying a significant penalty. Our costs for hydro are going to be increased somewhat by the provisions. Our smelting processes are going to require a lot of expenditures by people in this province." I think they are saying they would like to see everybody sharing in this.

Getting our situation solved here in Canada is essential, because there are people in the United States who are opposed to us and who will use anything they can. They drum up the old conspiracy that we just want to peddle power to the US and so on, which I think most credible people have dismissed. They still drag that one out whenever possible, so I think we have to do that.

I am optimistic that there are people in Congress who want to push through acid rain legislation. I am less optimistic about the support they might get from the present administration, although perhaps, and it is just a remote guess, Howard Baker's ascendancy to a key position may be of some significance. I think Mr. Baker is aware of Canada and foreign affairs in a way that perhaps others were not.

Mr. Poirier: Do you think this is going to be used by the Americans until New Brunswick and Nova Scotia line up?

Hon. Mr. Bradley: Not the Americans; it is unfair to say that. Those who are reluctant to see any control programs put in the US will use whatever evidence they can gather to show that Canada's commitment is not as strong as Canada says it is. That is why that is particularly significant.

We have also taken another initiative in the US, and from time to time various members have told me in the House, for instance, that there is the

political route, the legal route and the public relations route. I say "public relations"; that is, going to the US people themselves. Rod McLeod can speak to our latest initiative in the US courts. As you know, we were involved in two actions on acid rain. We are now appealing to the Supreme Court. Rod, you may want to elaborate on that.

Mr. McLeod: We filed what is called an application for certiorari to the United States Supreme Court. In effect, that is an application for leave to appeal to that court from the judgement of the federal Court of Appeal, where we were unsuccessful. We have opted to file our own separate application, rather than simply joining in the application being filed by the state of New York and other New England states, in the belief that the precise position of Ontario can better be stated by way of our own separate application.

Even if successful, the ultimate appeal will not be heard for some time, so we are not relying solely on that route. We are looking at the question of, in effect, starting afresh with the Environmental Protection Agency. The reason we lost in the federal Court of Appeal was essentially that the court was of the view that at the time of the so-called Costle ruling, which was the subject of that lawsuit, the Environmental Protection Agency in the United States had not followed American administrative law practices in giving notice to affected parties in order to give them an opportunity to make submissions and so on. It is really because of that administrative foul-up that we were unsuccessful.

That can be corrected by a fresh application to the United States Environmental Protection Agency. Then they will follow all the administrative and regulatory practices their laws require, and the matter can be reargued on the merits under the US Clean Air Act in the event the EPA goes ahead and makes a ruling requiring new plans to be made by the affected states. Those are long processes and we cannot expect immediate results; nevertheless, we think they are useful steps for Ontario to be taking.

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Mrs. Marland: I must say at the outset, Minister, that I am somewhat disappointed in your comments this morning. I think perhaps one of the significant things that you say on page 9, when you thank our committee for our diligence, is that you mention our nonpartisan approach to this matter.

As a member of this committee, I have been very impressed with the chairman and all the members, because that is exactly what we have had. We have had a nonpartisan approach to a very serious matter that we see as the total responsibility of all legislatures, whether in Ontario or in the United States. From what we have learned over the past three weeks, we also know that we are going to be looking at the high risk to human health and no longer just at the bullfrogs, the trees, the plants and the fish. I really commend the chairman and the members of this committee for their commitment to this subject.

However, I find it ironic that the only partisan input into this committee has in fact come from you this morning. On page 4 you suggest that your bite was 145,000 tonnes over what the minister of the day, Andy Brandt, committed on February 5, 1985. I just make that note because it is unfortunate that your approach has been different from that of the members of the committee.

Hon. Mr. Bradley: I do not agree with that. I look at that now and say I am sorry you are offended by that. It is a matter of looking at what was agreed in February 1985 and what we have ultimately come up with. I think there was a lot of discussion about the fact that Ontario had to be prepared to assume more of its fair share. Therefore, I think it was justified in assisting the federal minister in persuading other provinces that they should be on side. If you are offended by it, I certainly regret that. Andy is a good friend of mine.

Mrs. Marland: I do not expect you to be agreeing with me, but let us talk about the fact you have just mentioned: that 145,000 tonnes compared to what you have ultimately come up with. What Countdown Acid Rain has come up with is what we have been discussing. In the light of what we now know about what the banking provision could do, I would like to suggest that 145,000-tonne difference, which you focused on in your presentation this morning, pales when we look at the provision of banking.

What I find really interesting is that on page 7 of your comments you say: "I must say that I think we did a reasonable job in the fall of 1985 when we wrote the regulation. However, now we have more knowledge and information to work with. Today, we have this committee to give us some guidance--and that is what I am seeking."

On page 6, going over to page 7, you have a list of a number of questions. Why were those questions not asked before you wrote the provisions in Countdown Acid Rain? Why would you now be asking whether there should there be a banking provision at all? If this committee is now so important to the subject of your Countdown Acid Rain program, I have to ask where you would have been if this committee had voted as its mandate to study first the pollution of the Great Lakes and the Niagara River, etc., rather than what we decided. We discussed at this committee what our mandate would be to deal with first and we discussed both those areas. We decided to deal with acid rain first, but we might as well have decided to do it in the reverse and deal with the pollution of the Great Lakes and the Niagara River.

I think it is rather interesting and perhaps good fortune that we decided to deal with acid rain first. In the light of the fact that you have all these questions that are being asked today on March 12, which I suggest is a good amount of time since Countdown Acid Rain, perhaps 15 months later, I have to know why those questions were not asked about the aspect of banking, particularly because there are some of us who now recognize that the banking provision for Ontario Hydro questions, at least, the credibility of the Countdown Acid Rain program. At worst, it gives us a very real concern about what the final provision of the program will actually be. We have a great feeling of insecurity.

Hon. Mr. Bradley: The first thing I would say to you is that all those questions were in fact considered at the time. I announced the program in the Ontario Legislature on December 17, 1985. I do not recall a series of questions from the opposition since then that have questioned the banking provision, because I think people recognized that while they may not have been involved in any standing ovation or anything of that nature, what we had come up with was in fact a very good program.

When we were going through it as a government, we asked each one of these questions and I guess there is a way of being up front with things or not being up front with things, of having that flexibility or not having that flexibility. For instance, you may face a catastrophe and not have any

provisions for a catastrophe. Then you are in a situation where the government simply says, "We're in a catastrophe," and permission is given.

The program we put into effect, as I say, was not criticized on an ongoing basis at least and was certainly not the focus of a good deal of opposition from members of the House. It was generally accepted as being a good program and was hailed in the US by Senator Mitchell and others as being an extremely significant step. It was accepted that that kind of flexibility would put things up front; that if there were a catastrophe, a provision is sitting right in the program to say this is how we would handle a catastrophe.

Although I do not control Ontario Hydro in terms of its internal policy, I have encouraged Ontario Hydro to look at a number of options on how it might reduce its dependence, for instance, on the use of coal for the production of electrical power in this province. Among those we believe it should look at--and I think the committee probably dealt with this as well--is that of conservation. We all recall that when the oil conservation program came into effect, many people said it would have no difference, and yet it did have a substantial difference. In fact, we have cars now that get twice the miles per gallon--I do not know what the kilometres are--that they did before. So we think conservation is one.

We know Ontario Hydro is also looking at the options of the purchase of electrical power from Quebec and Manitoba, power that is produced by water in that particular case, true hydroelectric power. We know they are looking at wet scrubbers. Yesterday, if I recall correctly, the chairman of Ontario Hydro gave a commitment to put in 12 wet scrubbers. In addition, it is looking at limestone injection--I think you people were down to the Lakeview generating station--and other technologies and the purchase of lower-sulphur western coal.

It had a number of options that were available to it. I asked the question of the committee, "How do you think it can be improved?" But in 1985, of course, there was no program in effect at all, no specific regulation, even though we had announced our commitment in February 1985. We drew up the regulation. We asked these questions, and at that time there did not appear to be widespread opposition. At that time, it looked like it was the upfront flexibility that would tell people exactly what would happen if there were in fact a catastrophe.

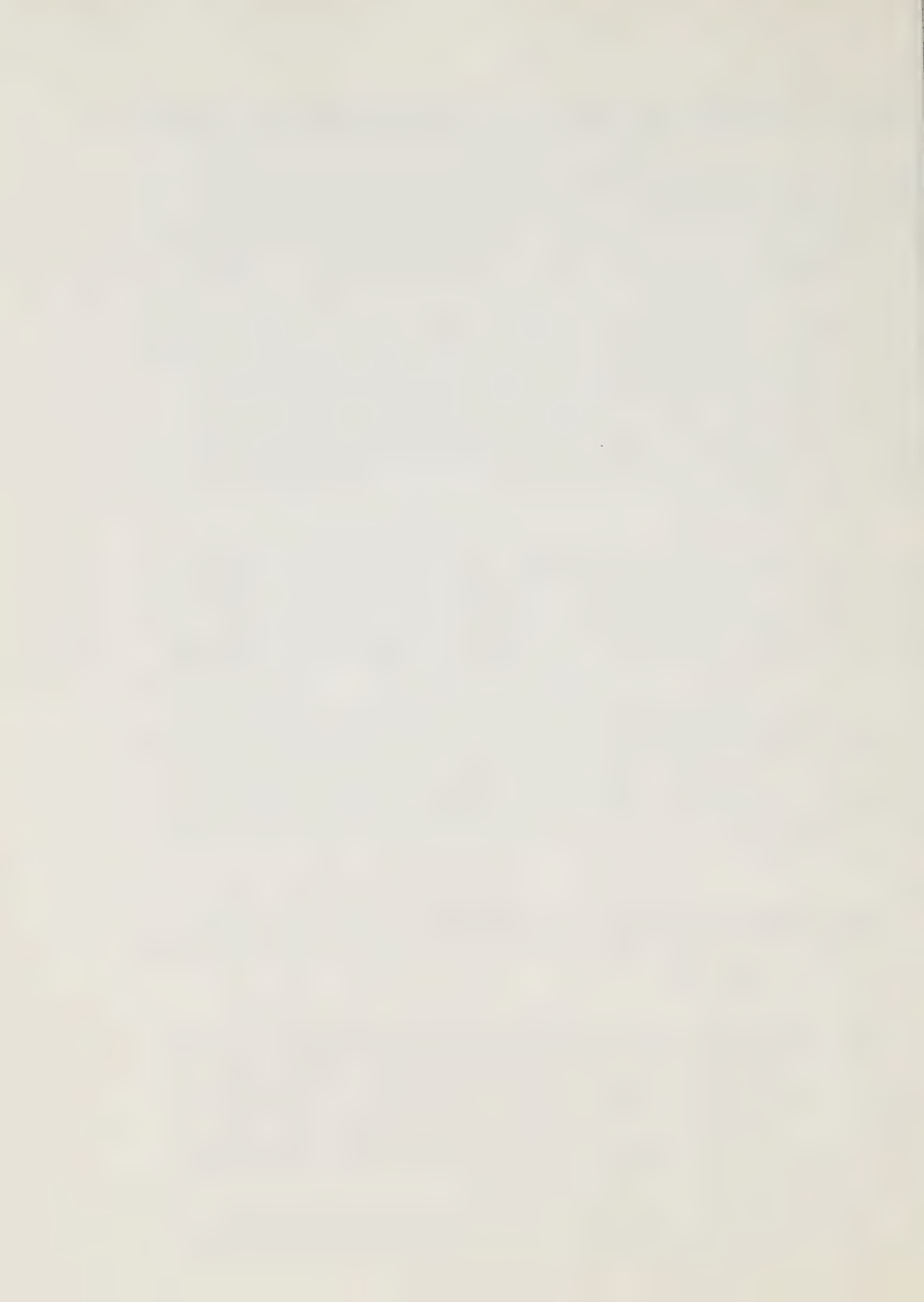
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Mrs. Marland: I have one final question. When you are speaking about a catastrophe, you are obviously talking about the loss of hydroelectric power.

Hon. Mr. Bradley: Yes.

Mrs. Marland: Anyone knows that for people who require electricity to survive, not only people in hospitals and medical centres but also people who are home, relying on dialysis, respirators or similar apparatus, a catastrophe would indeed be a very mild word for the loss of lives because of a loss of power. In this committee, we are not talking about the loss of power; we are talking about what the provision of that power does to our environment, and we are talking about a cost factor. We have heard from Hydro what the cost factor is to protect the environment and still provide for the security of the provision of electricity.

Do you not think the risk by not doing the maximum that can be done in emission abatement on the coal-fired plants is the greater risk, involving



human health from another direction versus the pure cash cost, which is the total argument from Hydro, as far as we can understand it, because we have heard it presented in a few different ways? Do you not think the risk that can be involved with the banking provisions is a greater risk than giving the protection by spending the money?

Hon. Mr. Bradley: It is not a matter of cost that concerns me. I guess cost concerns all of us to a certain extent, but when we were drawing up this regulation, cost was not at all a consideration for us. In fact, it was a consideration of Ontario Hydro's. Hydro says it will live up to the regulations, and it is going to do so, but if I were to ask Hydro, as I did, "What do you think should be your level?" it would be significantly different from what we as a government feel should be the level Hydro should be allowed to emit. We were told, "Of course, if you do this, keep in mind, my friends, that the electrical rates will go up."

At that time--and I was quoted publicly, and I say it again--I said the people of this province were prepared to bear the cost of additional dollars for the production of electrical power to protect their environment. I stand by that position. I believe we should be implementing an acid rain program, which in effect is going to cost money. There is no other way of avoiding the cost.

Talking about the catastrophe, however, is not talking about the cost in terms of a catastrophe, it is talking about having a major catastrophe knocking out the power in this province and not being able to produce the power to carry on our industries, our households and the activities that you very wisely point out are essential activities, keeping in mind as well that electric power is so significant to this province compared to other forms of energy which might be available in other jurisdictions.

This is why we felt this tough provision should be placed on Hydro, and this is why we think we should be up front in terms of the catastrophe which could have dire consequences for the province. Certainly the cost will be substantial to Hydro, and I think you and I will agree that the cost is one the people of this province are prepared to bear.

Mr. South: Listening to much of the discussion we have had, and reading many of the papers, I really believe our biggest concern is that of getting the attention of all Americans. I wonder if we could not build a coal-fired plant at the end of Point Pelee and fire it up when the wind is out of the north. Would we get the attention of Senator Byrd?

Hon. Mr. Bradley: Interestingly enough, I do not think some people south of the border--it sounds funny to say it, but you almost feel that is what you have to do sometimes.

Mr. South: Mexico did it.

Hon. Mr. Bradley: Yes, it did, and as a result, there is an agreement between Mexico and the United States.

Perhaps Americans, in some cases, are not aware that we impact upon them, although interestingly enough, everybody I talked to at the sportsmen's show in New York knew about the problem that had been created in the Adirondacks, for instance. I think we have to get the message across that it is transboundary in both cases.

I met with Senator Byrd, as a matter of fact, last March--an interesting individual. He was Senate minority leader at that time. He is now the Senate majority leader and he is certainly a person who would have a considerable influence on legislation moving through the Senate. He is also an individual who is steeped in the traditions and knowledgeable of the procedures of the Senate, and an individual whose own state is a coal-producing state but a state which receives some acid rain as well.

We simply have to pick those people in the Congress with whom we agree and give them all the encouragement and ammunition we have, and certainly talk to the others but not be discouraged that individual senators have agendas of their own because of their own local states. That is understandable, I guess, in some cases, although we reject it. We are going to have that, but I do not think we should be concerned by certain people in the Senate and the House and say just because of that, we should abandon all our efforts.

Should we do something drastic in terms of, as you say, environmentally causing problems to them? I do not think so, by any means, but I certainly see what your point is; that it is almost a sledge-hammer that has to be used.

Even at the state level there is another avenue available that perhaps we do not think of. We are provincial political representatives and in our country we have a large province so we are an important component in Canada. That is why I thought it was useful in Pennsylvania, when I met with the bipartisan coalition, that we encourage it to continue its efforts.

I think the state level is also an avenue of action and we should be getting that message across every time. There are a lot of American environmentalists and others who would be happy to put forward their case as well. I have had the opportunity to chat with those people and they continue to do it. Our own Canadian Coalition on Acid Rain has performed a very significant service in Washington, south of the border, in putting our case forward.

Mr. South: I think the recent indication of the public health significance of acid rain has provided us with one of our best levers and one of the best hobby-horses we have for getting the attention not only of more Americans but also of more Canadians. Is the ministry considering funding any further public health, epidemiological-type studies to tie acid rain a little more closely to public health significance?

Hon. Mr. Bradley: This is a relatively new avenue of action, and I think a couple of members of the committee have alluded to it; that is, the concern for public health. In the past, particularly with the transboundary pollution, where you put the stack up high enough and send it somewhere else, much of the research has dealt with the fact it has caused damage to forests, to lakes, to buildings such as this, and wildlife is now being affected by it. That has been the concentration of attention.

Interestingly enough, in one of the meetings I had with an environmental group, someone made an observation which is rather morbid, but it was nevertheless an observation. He said, "The problem is, we do not have a body count when you are dealing with acid rain." I think that is what prompted people to move more into looking at health effects, more of that being from ambient acid rain probably than anything else, but certainly the transboundary sulphur dioxide emissions could also have that effect.

I was born in Sudbury, not far from the smelter there, and anybody who

lived in Sudbury at that time could not help but feel there was a very strong health effect with the west wind coming across the city, particularly for anybody with a respiratory disease. The sulphur was actually choking at that time.

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In the early 1970s, the solution was a large stack which sent it elsewhere--a little export. That is not the solution. In terms of health, yes, our ministry is now looking at joining in with others in funding studies which would determine what the effect is on human health. In the long run, what really starts to motivate the members of the Congress is that kind of discussion. It will take some time to make a determination of whether it is actually the SO₂ or other factors of an environmental nature that are having a detrimental effect on human health.

Mr. South: Of the three you mentioned initially, I believe the public relations gambit is really the best. I expressed views at the beginning, when we were establishing the agenda for our committee, that the committee would serve its most useful purpose by going down into the United States and having some high-profile hearings there. That kind of thing would possibly attract public relations and attention that a lot of the normal channels do not.

Hon. Mr. Bradley: The committee's activities are whatever you wish them to be, but there is no question that the persuasiveness of our argument is increased by the people who are there from Canada making that case. The people in this committee obviously have a concern about the environment or you would not be serving on it. Gathering that kind of information may be something you do down the line, but gathering that information and making the case for acid rain abatement and acid rain controls can be quite effective. However, as I say, that is something you people yourselves will decide upon.

Mr. Chairman: Yesterday Mr. Wiseman brought up the subject of California. I cannot remember why now.

Mr. Partington: One of the things we were talking about was the purchase of US coal. I am wondering whether the minister could undertake to have the coal contracts between Ontario Hydro and the US sources tabled so that we could look at them before our next meetings.

Hon. Mr. Bradley: If that information is available--and I do not see why it would not be--I do not know that, but I can certainly see that would be the case and that would be very helpful for us to analyse what the short-term and the longer-term commitments would be in terms of those contracts. I will certainly request those or the committee could request those and I would be in support of the committee's request to have those before the committee.

Mr. Partington: You commented that the need for the banking provisions with Ontario Hydro were to meet a catastrophe which, on a given occasion, would require Hydro to go beyond its limits. Is that your position with respect to the banking?

Hon. Mr. Bradley: Could you state that again?

Mr. Partington: Earlier, you indicated that the need for the banking provision in the regulations dealing with Hydro emissions is, in the event of a catastrophe, which would require additional sources or substitution of

sources of electricity, Hydro could go beyond those limits, subject to approval, as set out in the program. Is that your belief, that the banking is to be used, generally speaking, only in the event of a catastrophe?

Hon. Mr. Bradley: This would be the provision we would seek. Keep in mind that the Minister of the Environment is, I guess, the bank manager, for one thing. You can use that analogy. Hydro has to justify to the cabinet that it requires the use of any further coal for any specified reason. The cabinet would decide whether there were other options available. That is what we discuss when we talk about the other options that there are and about the pluses and minuses in terms of the costs which Mrs. Marland referred to in her question as you did in yours. When faced with that decision, the cabinet is going to have to ask, "Is the plea of Ontario Hydro a justified plea or are there other ways of addressing its needs?"

In my view, this would be the last way of addressing that need, if there is another way of addressing it. For instance, if it has quick access to power from Manitoba or from Quebec, that is one way of handling it.

I guess if you get a nuclear generating station or a major unit down for a time, then that is where you are talking about the need to exceed, but it will have been under in other years.

Mr. Partington: I thought that perhaps was what you were looking at. In looking at the Countdown Acid Rain description on page 6, it states, "In the event of variations in electrical demand from fossil-fuel units caused by such things as an extra-dry summer, very cold winters, or the unscheduled brief shutdown...." The last one might be the catastrophe. I just question whether extra-dry summers or cold winters are catastrophes. Would you comment on it?

Hon. Mr. Bradley: I understand what the member is asking now. I am sorry for the first one, Mr. Partington.

Yes, there are the two banking provisions that you are addressing. One would be a catastrophe that would be a significant amount of excess permitted in the catastrophe situation. The other banking provision is a small amount that it would ask to be in excess if it had built up a surplus through the banking provision. In other words, if it put that deposit in where it had said: "We are under in this year, and we are under in the next year. We have something on deposit and we have an extremely hot summer where we have to get power, for instance, for cooling systems and so on, or a winter"--that is more likely for us--"a very cold winter where we have a great demand for hydro in that winter." Then it would be able to use a certain percentage of that banking.

I see what the difference is. One is a relatively small amount and the other might be a catastrophe that would be a significant and longer-term amount.

Mr. Partington: If I can follow through on this line of questioning, in Ontario Hydro's presentation to us, it presented a chart on page 2 that showed that roughly in the five years ending in 1993, if Hydro met its targets, it could accumulate a bank of about 750,000 tonnes of emissions. I used that figure when I questioned Mr. Campbell yesterday. The concern is that then, in the banking in subsequent years, it could probably exceed the limit set by the government, subject to getting approval, by something like 120,000 tonnes a year, which would put it practically back at the mid-1980s level. That is the concern about banking.

I guess the question may be: Is the banking provision there because there are going to be some problems with developing technology to deal with the sulphur dioxide in the late 1990s and, therefore, this is a comfort zone for Hydro, or is it clearly there for catastrophes? I think this is the concern of the people. It is going to be a tremendous bank for Hydro to draw from.

Hon. Mr. Bradley: First, it is a rolling average that it loses after the five years.

Mr. Partington: It could still take 150,000 tonnes a year from 1993 to 1998 based on the banking provisions.

Hon. Mr. Bradley: Mr. McLeod has asked to reply further.

Mr. McLeod: Mr. Partington, it is important to go back to the precise words of the regulation because the very issue you have raised was raised by the ministry in the course of discussions with Hydro prior to December.

In effect, what the regulation provides for is two possible routes by which Hydro, at any given point, could exceed the set limit. One route is the so-called banking route by which it can go into a reserve built up by reason of its having been under the limit in previous years.

With respect to that route, the regulation requires Hydro to provide a report by December 31, 1988, that will review--I think the precise wording of subsection 7(1) of the regulation is: "Review the options available to Ontario Hydro and determine what numbers of kilotonnes of sulphur dioxide and tonnes of nitric oxide should be established by amending this regulation for purposes of" the banking section.

It refers to subsection 2 and that indicates, after that report is submitted, the Lieutenant Governor in Council will then determine what amount it should be allowed to take out of the bank. So the whole question of the quantity it should be allotted to be taken out of the bank at any one time is not yet settled. It is by no means everything that is in the bank.

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Mr. Partington: I agree, except there is a prima facie right to draw on that bank, based on the initial regulation.

Mr. McLeod: There is a prima facie right to draw on it, but--

Mr. Partington: Subject to the approval of the government.

Mr. McLeod: It is not only subject to the approval of the government of the time but subject to the government's decision after receipt of the report on December 31, 1988, about what the ground rules are going to be as to how much and when they can withdraw.

Hon. Mr. Bradley: That gets back to Mrs. Marland's question, if I can come back to that briefly, because it is combined with her question on why you would ask a series of questions again after we have already gone through the process of asking those questions. Again, we come back to the fact that, until such time as we receive that final report, the amount of the bank they could use has not yet been determined. This committee, I think, will be useful in giving us guidance on what it thinks that amount should be.

Mrs. Marland: Why would you not be studying the amount?

Hon. Mr. Bradley: I want the involvement of the committee and I am giving the members of the committee that opportunity. That is the best sense of the legislative action.

Mr. Partington: If I can follow this through with a couple more questions, I was questioning Mr. Campbell yesterday about the need for this banking provision. I can quote from an article in the Toronto Star this morning. He said: "If you're trying to take away the flexibility, the regulation will be too tough. This would look bad for the government. It would also look bad for Ontario Hydro."

I guess the question I have is, have you set regulations you know are too tough and are you using the banking provisions, ultimately, to bury the regulations that you may know now?

Hon. Mr. Bradley: No. I do not think they are too tough. I indicated clearly at the time I announced those that they were too tough, but I felt, when you say too tough--

Mr. Partington: I am quoting Mr. Campbell.

Hon. Mr. Bradley: Mr. Campbell and I do not always agree. From time to time we have had disagreements. In fact, during the discussions that took place between Ontario Hydro and the Ministry of Environment, there was not always agreement on where we should be moving, as the member might know.

We feel the limitations we have placed on them, in fact, are realistic. We think the banking provision allowed that flexibility, but once again, no figure has been established until they finally report on how much they can withdraw at any particular time, and since it is a rolling average, they start to lose what was there previously.

Mr. Partington: I appreciate your comment, because I think what you are saying is that the banking provision should not be used to let Hydro off the hook with respect to meeting its objectives, it clearly should be used only to address a catastrophe.

Hon. Mr. Bradley: Exactly. I think the member is exactly on.

Mr. Partington: When we heard from people from Inco, they indicated they did originally have technology in place to meet a 50 per cent reduction by 1994, but they do not currently have technology to achieve 60 per cent reduction and they might not have it by 1994.

The question is, first of all, what is the difference in acid emissions from Inco, and what is the effect on the environment, on the emissions in Ontario, of the 10 per cent reduction of Inco's limit?

Hon. Mr. Bradley: I guess I would not have the precise figures on that in front of me, except to say that when we developed the figures, we felt they could be realistically reached by Inco.

The argument will always be put forward, and each of the people we are regulating will put forward the argument, dealing with acid rain, that he has difficulty or it is financially difficult to reach that particular goal. In fact, Inco has, to its credit, been quite adept at finding technology to effect the reductions.

We think that going beyond what Inco is dictating for itself--it announced what it felt it would do--we felt it should do more, keeping in mind a couple of things. First, there is an effect; even 10 per cent more is 10 per cent too much, but I cannot tell you the specific difference that would have made.

In addition to that, whenever we have gone south of the border--and I guess Doug has been here longer than I have, others of us are all relatively new; it tells us something about the Legislature, I guess--one of the things the US always counted was Incos. They would say all the time, "You can say this, but that is so many Incos." That has always been the major focus of attention of the enemies of acid rain controls in the United States.

I think they are looking at bulk smelting, for instance, rather seriously. I think you will find that when they put their technical and scientific people to work, not only might they achieve what we have set for them as a regulation, but if they take the necessary action, they might even achieve over and above that by looking at things in more of a radical sense in terms of changing their processes. We know Hydro has been able to do that in the past. We are confident they can again.

Mr. Partington: I appreciate your comment. I think we should always strive to do more. I am just concerned about the risk, that to achieve 60 per cent you may jeopardize 50 per cent, because I think Inco's evidence is that it is an entirely different process.

I have two comments. You were asking for comments on the US scene and the Canadian scene. As you know, this committee was struck to review the Countdown Acid Rain program only. But certainly with respect to the international aspects of acid rain, which seem to be the overriding ones, I have not heard from anyone yet as to the international law aspects from Ontario's point of view. We talk about suing in the United States and we talk about political pressure. It would be interesting some time to hear about some international law aspects as to what other procedures we could be taking, before the International Court of Justice, the United Nations or some other avenue.

Hon. Mr. Bradley: I think that is a suggestion worthy of following, because I think the member wants to see as many avenues of action followed as possible in dealing with those problems.

I should indicate a little correction here. I think Mr. Campbell promised 12 scrubbers yesterday along the lines of Hydro's. I think I said "wet scrubbers." He said 12 scrubbers would be put into effect. I do not want to misquote Mr. Campbell.

Mrs. Grier: The minister seemed to imply in his comments that there had not been any criticism of the banking provision.

Hon. Mr. Bradley: Not much anyway.

Mrs. Grier: I would just like to set the record straight. I certainly commented, when Countdown Acid Rain was announced, that this was a loophole I did not agree with. If it was not raised in the interim, it was because I and many others were waiting for the minister to live up to the commitment that hearings of this committee would be scheduled during the early part of 1986 to review Countdown Acid Rain. Now we are here looking at it.

Hon. Mr. Bradley: You and I do not control the House leaders, unfortunately.

Mrs. Grier: I would like to ask a question about the whole banking aspect of it and perhaps rephrase a question Mr. Partington asked. In our discussions on this issue, we had two interpretations of why the banking is there. I would be very interested in your opinion as to whether the banking provision was inserted into the program as a political loophole for the government if the regulations were not met, as was implied in yesterday's testimony, or whether it was inserted because Hydro insisted it be inserted.

Hon. Mr. Bradley: What an awful choice you are giving me of the two. There is probably a third choice one could come up with.

First, it is not a political loophole in the program. Second, I am sure Hydro preferred that we simply not place on it the regulation we have in terms of the levels we permit. Mr. McLeod, who was involved in the negotiations, would like to elaborate on that.

Mr. McLeod: I think the answer is fairly simple. If it were not for the banking provision, the numbers Hydro has been regulated to for 1986, 1990 and 1994--370,000 240,000 and 175,000 tonnes respectively--would have had to be higher. There was a case made by Hydro in the negotiations with us that, in the absence of significant change in policy on the part of government, I suppose--which was certainly beyond my level in the course of these negotiations--it would be impossible for Hydro to deliver its power to the people of Ontario with the facilities it had and meet a limit as low as we got them to without some ability to have some flexibility by way of the banking provision.

It would really boil down to a choice whether we should accept a higher annual emission limit or whether we should go for the lower limit and control their activities by way of that lower limit with the banking provision.

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Mrs. Grier: What kind of a limit was Hydro prepared to accept without banking?

Hon. Mr. Bradley: It is sufficient to say it was higher than what we have placed on them. I guess they were looking for as high as possible in terms of meeting their own power requirements. They saw us as being the regulator. They would do as we said, but obviously they wanted to be able to burn as much coal as they could to produce what they felt would be for the needs of the province.

To go back to the banking provision, in the very small amounts we are talking about where there is a sustained cold winter, they would have to be in excess to produce the electricity around the province. I remember Premier Davis used to talk about that all the time, the adequacy of power for Ontario and how important it was to have that adequacy.

Again, the provision that they must get the consent of cabinet to do so is a provision which is rather interesting for them to have to go through. In terms of the catastrophe--that was the second one--Mr. Partington has appropriately pointed out the differences. The one would be a relatively small amount to meet emergencies of a lesser level of concern, and the other would be a catastrophe provision. It puts circumstances we could face up front.

The other way to do it is simply to make the regulation a tough regulation, as it should be. Then, of course, when the great difficulty arises, the government just says, "Go ahead." I think it has been better to be up front with it.

Mrs. Grier: For the government just to say, "Go ahead" is precisely what some of us have been worried about. We have been assured all the way through this that the government would not just say, "Go ahead."

Hon. Mr. Bradley: No, it certainly would not.

Mrs. Grier: It would scrutinize and it would have some public scrutiny of the request for Hydro to exceed the limits. That is the contradiction I have had trouble understanding.

If you mean what you say about putting in place a mechanism that requires Hydro to justify any expansion over and above the regulation and if you intend to allow some public scrutiny of that, what is different from just allowing that to happen when it is needed, rather than building into the regulation the assumption that it is going to happen?

Hon. Mr. Bradley: I guess it is the difference between being up front with a situation and waiting for something to happen and then saying, "We are going to do it despite." By having it up front, you are saying to people of this province, "Yes, these are the possibilities."

Again, with respect to your suggestion on a mechanism for scrutiny of that, I would be interested in the committee's suggestions on the final amount we might permit under that provision. We have not reached that point, so that will be good.

Second, your comments on how there might be some public involvement in that process would also be useful, because I think that is what members of this committee who are interested in this subject would want.

Mrs. Grier: I want to get into that, but before we leave the banking, I am sure you are aware, as we have become aware, of Hydro's planning process, the very long lead time and the lack of flexibility, which Hydro conceded yesterday its reliance on nuclear power afforded it.

Do you not foresee the case that when you come to look at Hydro to see whether it really requires going beyond the regulation, the answer is going to be: "Knowing we have the possibility of going beyond the regulation, we have planned on that assumption. Therefore, you cannot change direction three or four years from now"?

Hon. Mr. Bradley: I think we have made it very clear that it will not be easy for them to be able to draw on the bank. That has been very clear to them. The provision was put there, but in all the discussions and negotiations it is clear that would not be an easy process. As I say, that is where you have touched on it.

You may feel a committee of the Legislature would have some significant role to play. We would be able to draw on opinion from outside the province as well, independent opinion as to whether Hydro would ever have to draw on the bank. The provision is there and is up front. I know what the member is saying. She does not necessarily accept it, but I hope she understands that my

preference was to see it up front where everybody could see it as opposed to simply being sneaky about it and doing it at the time. I hope it did not build the expectations.

Mrs. Grier: That is my concern, because it it has built the expectations, though Mr. Campbell did say yesterday he could never foresee wanting to go beyond 100,000 tonnes. I am wondering if you would be open to that?

Hon. Mr. Bradley: I could not foresee that either.

Mrs. Grier: He has the option of going to 500,000 on the five-year average.

Hon. Mr. Bradley: Not so, really.

Mr. McLeod: The key is that they have to file a report with the government at the end of December 1988, which will be reviewed with a view to determining precisely what the rules will be, how much they can withdraw, when, on whose permission, on how much advance notice, all those kinds of issues.

Mrs. Grier: Let us look at the end of 1988. What kind of process do you envisage, when you receive not only Hydro's submissions but all the other submissions, at the end of 1988, in your contemplation of the possibility of public scrutiny? Do you foresee that happening and how do you reconcile that with Hydro's assertion that the environmental assessments and all are going to take three years and the suspicion some of us have voiced that the whole public scrutiny may be used as an excuse for slowing down the implementation?

Hon. Mr. Bradley: I do not know why it would really. I do not want to see it used as an excuse. Again, I understand what the member is saying. I do not see that as an excuse. I think the clear direction has been given, not just by the government, in fairness, but by all the Legislature. We have had a select committee on Ontario Hydro affairs before; I sat on it at one time.

I think Hydro understands that there is a greater direction from this Legislature. We are not simply willing to see their projections approved. They will certainly be subject to scrutiny. I believe Hydro understands that the other options we have talked about are ones we are really interested in, not just as a government, but as a Legislature.

I go back very briefly to it. You have spoken of this before. You are the Energy critic as well--at least you were on the select committee on energy--and have spoken about how conservation is possible. You and I both remember going through the 1970s. Everybody said, "You cannot do it." Well, we did it. I think we are in the same situation.

Looking at the talking furnace, it annoys me, as the Minister of the Environment and as the MPP for St. Catharines--I have not seen the talking furnace for a while--that they utilize electrical power in certain ways. I think we should be using it for essential items as opposed to others. I think Hydro will certainly know that it has to look at those other options.

Mrs. Grier: And the question of public scrutiny of the plans that are submitted in 1988 and a legislative committee to review the implementation of those plans?

Hon. Mr. Bradley: What do you want? The committee can tell me what it wants. What do you think we should do?

Mrs. Grier: What I want is the greatest possible opportunity for public involvement in discussing what is submitted to you at the end of 1988 from Hydro and the other three companies controlled and also a commitment that should there be at any time in the future a suggestion that the levels within the regulation be changed, this too will be subject to public hearings and public discussion.

Hon. Mr. Bradley: I will see that in the committee's recommendations no doubt. You have some good suggestions there that I will take back to my colleagues.

Mrs. Grier: Can I ask perhaps some of the questions that were placed before this committee by Professor Dewees, whose testimony you referred to. He said, "What will the ministry do with the 1988 reports?" which I think you have touched on. He went on to say: "What if these reports are pessimistic about technology or economics? What if they request delays or increased emission rates? What if they identify great uncertainties regarding the effectiveness of the control technology proposed to be installed?"

Hon. Mr. Bradley: From the meetings I have had with, for instance, the people we are regulating and from the discussions I have had with others who are interested in this field, I must say there are very few who express that concern. In fact, they believe the technology is there.

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More likely, it is a question of the costs that would be incurred. Ontario Hydro will simply have to charge more for its rates, and that is a fact of life, but I think you and I would want to see that the additional cost on the rates was for the purpose of meeting environmental obligations and not simply for other purposes, using environmental obligations as an excuse.

In terms of the smelters--actually, there are two smelters and a sintering plant--they are available for the funding to which the federal minister and I agreed in the fall of 1985. There was a meeting of the Council of Resource and Environment Ministers --I know you always want me to make reference to that--in October 1985 here in Toronto, where Mr. McMillan and I publicly were not on the same wavelength as to the application of that program.

We vowed at that time in a public news conference that we would get together and hammer out an agreement. In fact, we did that in the fall of 1985, and I had the verbal commitment from the minister then, on behalf of the federal government, that up to \$85 million would be available from that fund. I indicated we would match that, and certainly my colleagues in cabinet supported that, so there is up to \$170 million that could be available to assist in meeting those obligations through smelter modernization.

What we are seeing all around the world, as people are compelled to deal with these environmental obligations, is that people are able to use the technology from other places. Frankly, I do not see any excuse for any of the emitters not being able to meet that, from the information I have seen.

Mrs. Grier: We have always talked about the fact that Hydro was going to have to pay for its technology by adding it on to the rates. That is the option that, certainly, it promotes to us.

Given that the other three participants have access to this extra funding, have you given any consideration to the possibility that one of the incentives that could be given to Hydro to increase the rate at which it retrofitted some of its plants would be specific funding from the province, earmarked for doing more scrubbers in 1994 than it itself felt it could do?

Hon. Mr. Bradley: To me, it is taking from one pocket instead of taking from the other pocket; it is all the people of the province. We do limit export in peak hours for part of the grid. So I do not think there is a substantial difference, frankly, whether you take it out of one pocket or another. Hydro will have to charge it or the taxpayers of this province will give it as taxpayers. There is not a significant difference in that. Hydro will have to bear any costs that are borne, and that means those who use the power in the province. With the smelters, the companies will largely pay for it.

Interestingly enough, when you talk to Inco--I am not saying that at the end of 1988, it will be the same case--Inco has consistently said, "We prefer to do these things without public money." I will say it is to its credit that it has said that. It has left open the option of utilizing part of this. I think Falconbridge would like to do it as much as possible with its own money. Alzoma is the most likely of those to utilize that fund.

What we have is a situation where they would still have to justify to a federal-provincial committee their actual need for that funding to carry out their obligations. They will do it two ways: first, by reflecting it in the price of the product they produce; and, second--and this is almost always the case; I cannot think of a case where it is not the case--when you have them put in environmental controls, at the same time they effect other efficiencies to make their operation more competitive and efficient. I think the two can go hand in hand.

Mrs. Grier: To go back to Hydro, you are equating Hydro's ratepayers with the public at large, and that is not necessarily true. The portion of costs varies.

What I am suggesting is the possibility that the public at large fund an increased rate of retrofitting by Hydro, rather than putting the total burden of that on its ratepayers.

Hon. Mr. Bradley: I do not know how many people would not use Hydro in the province. It is maybe like property taxes when you served municipally, as I did. Many of us on the committee may be saying that rates do not take into account the ability to pay but Hydro can, of course, charge rates in different ways. As Eddie Sargent always used to bring before committees, there is the lifeline option of providing a certain amount at a cheap price and then much higher after that. It is still easiest to do it by reflecting it in the rates, but certainly if this committee says, "Why do you not do it another way, by the Ontario government giving money to Hydro to do it?" we could look at that. I honestly do not see a substantial difference in it. I really do not. The people who will complain the most when the rates go up are in the industrial sector.

Mr. Pouliot: You are right.

Hon. Mr. Bradley: The members from northern Ontario know that they are competing with Quebec, which has cheap power.

Mrs. Grier: That is why I am suggesting the alternative.

Mr. Pouliot: You are right. Quebec is leading--

Hon. Mr. Bradley: That is where it may come into effect. I see your point.

Mr. D. R. Cooke: I have two matters I would be interested in exploring. I will mention the second one first, briefly. If we get time for it, Mr. McLeod might wish to mention it.

As a supplement to Mr. Partington's question about where we stand on legal matters, I recall the old Trail smokestack case prior to the First World War where the United States of America successfully sued Canada in the World Court for polluting its air. I was wondering whether that is a precedent that might be of some value today. Maybe it is not.

More seriously, Minister, do you recall last summer there was a Congressman from West Virginia congressional district who came to this building at his own expense to find out what we really thought about acid rain. Being from a coal-producing congressional district, I think he wanted to disprove some of the concepts that were going down there. I believe he spoke with you and he may well have spoken with Mr. McMillan. I can report to you that he went back home and reported to the Northeast-Midwest Coalition, a bipartisan coalition of Congress people, that he had decided that maybe the politicians in this country were being less than forthright with him with regard to what the real feelings were.

He went up to Sudbury. He looked around Inco. He talked to the officials at Inco. He went to look around Falconbridge and was surprised to find that they were serious in reducing their SO₂ emissions. He reported back, I suppose to his chagrin and surprise, that the industries in this province are serious in following the Countdown Acid Rain guidelines.

I wondered if it might be helpful if we somehow or other got across to the Americans that we are not simply grandstanding here, it is the fervent desire of the people and the industries of this country to somehow resolve this problem and, in so doing, get that same message across to the people in the United States and thereby get it across to the Congressmen in the United States, without the red herring of New Brunswick. Perhaps, somehow--I do not know how--they will get the view that we Canadians all feel this is an urgent issue.

Hon. Mr. Bradley: Interestingly enough, despite the fact some have been critical from time to time of Inco, and certainly the discussions with Inco were not easy by any means--I think members of the committee have referred to discussions that did take place; they were not easy discussions with Inco--now Inco is advertising the fact that it is out to meet its environmental obligations. In the last annual meeting of Inco where Greenpeace showed up, it gave an indication that it was prepared to do this. I think that is very important.

The point you make is very important, that the people we regulate are serious about meeting their obligations because, as I say, initially it is difficult when you get into negotiations and they say, "It cannot be done. It is difficult, it is costly and so on," moving to a position where, "Yes, it could be costly, it could be technically difficult, but we are really working towards it," and then you finally get to a position where, "We are going to do it." I think that message is worth while.

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Another thing we did, and we do this from time to time, we had a number of writers a week ago Monday up to the Muskoka area from the US--Time magazine, Newsweek, the New York Times, the Chicago Tribune and so on--who visited not only Muskoka and had a dinner with us there and discussion with people from a variety of fields, but they also flew to Sudbury to look at the situation there.

Mrs. Marland: They were there the day before we were.

Hon. Mr. Bradley: Yes. That is very useful in terms of getting that message back to the US. Obviously, as I say, the companies are not going to be quite so enthusiastic as those of us in this committee, but at least they would detect that they are serious about it. I think that kind of initiative is useful as well.

I know Congressman Boehlert from New York state, who represents an area not all that far from our border, in upstate New York--

Mr. D. R. Cooke: He gets St. Catharines' pollution.

Hon. Mr. Bradley: That is right, he probably gets that. He is a Republican member, a good friend of Bud Gregory, by the way. I told Bud he was in the gallery at the time. I think he attended a Conservative convention here as a guest or something at some time, so he knows members of the Legislature quite well, which is good. It is great to have a person who has that connection with members of the Legislature, and he is really positive.

I met with him in Washington. He came back here. He addressed the Canadian Coalition on Acid Rain, met with me, met with other officials, and here is the kind of person we have to line up and be happy he is already lined up on our side, because he is a person trying to forge a bipartisan coalition on this issue. I think having them come here and see what we are doing and us heading there is exceedingly important, because people here will get tired if they say, "Look at all we are doing, and it is not going to do nearly as much good as if the US does it."

Mr. D. R. Cooke: He is a Republican in a congressional district receiving pollutants, as opposed to the other Congressman, who is a Democrat in a polluter district--

Hon. Mr. Bradley: That is right.

Mr. D. R. Cooke: --who somehow or other wanted, I think, to find that we are not serious, that it is not a problem he is going to have to contend with.

Hon. Mr. Bradley: He found the opposite.

Mr. D. R. Cooke: Yes.

Hon. Mr. Bradley: He was sceptical, I agree, but he found the opposite. I am pleased that he did.

How long do you expect me to be here, by the way?

Mrs. Marland: Until 1 o'clock.

Hon. Mr. Bradley: I was supposed to be here for an hour, but I would never leave early because I will hear about it on the radio that I left early.

Mr. Chairman: I appreciate your staying a little longer than you may have scheduled yourself for.

Hon. Mr. Bradley: I like these meetings. I think they are great.

Mr. Chairman: There are a couple more speakers who may like to ask questions of you.

Hon. Mr. Bradley: Sure. No problem.

Mrs. Grier: And short, precise answers.

Hon. Mr. Bradley: Are you accusing me of not giving precise answers?

M. Pouliot: Merci, Monsieur le Président, et bonjour.

L'hon. M. Bradley: Bonjour, oui.

Mr. Pouliot: The minister answers well, so I am sure he can stay for a few more questions.

Hon. Mr. Bradley: Sure.

Mr. Pouliot: We are always blessed when the minister indulges in a philosophy which is based on the premise of flexibility, trust and so forth and describes in the best of terms the record of Inco and the likes of Falconbridge as being adept. I came to this province to learn English, and as I worked 20 years in the mines, one of the first words I learned was "inept" as more what describes the records of the Morgan-Rockefeller group, whose forte is not directed towards having a social conscience nor addressing the problems of the environment. They are more concerned with another environment.

The record of Inco and Falconbridge, with their Sudbury operation, speaks for itself. I am referring to a few years back, when the price of nickel was exceeding \$3 an hour--\$3 an hour was the rate that was paid; pardon me--\$3 a pound, and also, the price of copper was surpassing \$1.50 a pound. It very well afforded Inco in those days to look to places like Caledonia so it could better the coffers of the company. They were making in the neighbourhood of \$350 million to \$500 million net profit per year for almost a decade. They had the ability then to address the problem of pollution; they did not do it.

An environmentalist would perhaps mention that they did not even pay lipservice to it. It was not even a priority with Inco or Falconbridge. The only time they addressed the problem of pollution was when they were forced to do so. We are appalled and shocked to see the statistics that attest that the toxicity levels of all sorts of pollutants have been reduced. They have been reduced because they have cut tonnage; it is as simple as that. Why have they cut tonnage? Because the market for both their main products, nickel and copper, just is not there at a price that would make the operation more profitable. If you have less tonnage, we all understand you have less pollution.

Those people should not be given the go-ahead. The only language they understand is not a threat, but the kind of tough legislation someone who stands up puts forward. Let the polluter pay. They must pay. It is the price

of doing business. We fail to see this in the kind of legislation you are bringing forward. .

Hon. Mr. Bradley: What do you fail to see?

Mr. Pouliot: We fail to see the kind of hard clout that would dictate to the polluters what they should pay should they fail to meet the standards or if they exceed or surpass the levels in the standards. I will come back to that in a minute.

Hon. Mr. Bradley: The penalties of Bill 112 are there. I recall being in the Legislature when the leaders of both opposition parties were asking me to give money to a company to meet its environmental obligation.

Mr. Pouliot: The money will go into general revenue and, quoting one of your colleagues, "I guess there is always something that needs to be done."

With respect, in terms of Ontario Hydro, I had the vivid impression the Ministry of the Environment was somewhat mesmerized by it. There was some indication yesterday that, indeed, Ontario Hydro wrote the proposal on the banking provision, that you did not lead but you were sort of left to react.

Hon. Mr. Bradley: I will put that in my memoirs.

Mr. Pouliot: The scenario would be as follows: The banking provisions are there to fit the plans Ontario Hydro has. It gives them the flexibility to do that.

I was a little disturbed this morning when the minister began to talk about a catastrophe. He used the scheme of the innovative and imaginative banking provision in lieu of a very simple, special provision. You do not need a banking provision. We are not going to let a reserve dictate what the weather will be in Ontario.

In the case of Ontario Hydro, I would have liked to have seen a surety bond posted. I would have liked to know that the polluter would pay as he pollutes. Should they exceed and surpass the guidelines and standards and in the unfortunate event they should have to pay fines, I would have liked to have seen the assurance that the money would be recycled, directed and addressed to the problem we are trying to solve. That is the bottom line.

I did not want to see a loosely knit provision whereby the province would be the recipient of the money and the company would still be allowed to pollute. In their case, although they provide an essential service, they are cartelian and monopolistic. They are the only people on the block, so they can always pass it along to the consumer. Theoretically, Ontario Hydro could keep on doing what it is doing--polluting, in this case--and not have to pay a cent. They do not have to charge what the market will bear. They are the market; they are the only game in town. Yet, possibly, the government could be the recipient of this money, Ontario Hydro would end up charging more for electricity and yet the problem of pollution would not be addressed.

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Are you prepared to strengthen the rules? I believe in what you say, that you are not only blaming the south. It is always fascinating that when everything else fails in the riding of Lake Nipigon, we can always blame the south, and I think you have caught on that you direct your spears at the

neighbours to the south. I know there is more than that; your government is committed--I do not say this with a great deal of pain; I say this very tenderly--you are committed to rectifying the problem.

You are blessed, in your case, contrary to what some believe--there is no "but" or "however"--with an excellent staff that is as dedicated as you are. I am not playing political games, but I would like to see real clout. Give them the flexibility. I am not impressed with the banking mechanism which is nothing short, in my view--maybe in my view only--of a sham, an opportunity, an invitation to the table of sin when it comes to polluting.

I look at the proposals from Ontario Hydro, for instance: the use of coal goes down from 1987, then goes up again in 1996, except for 1991. We talked about scrubbers. We also talk about having to generate billions of dollars, and scrubbers will not take place before the plant expires of its own accord. There is nothing to be said after 1994. You have the responsibility to see that you have continuity in this process, for continuity means credibility. Trust and flexibility with Ontario Hydro can only be done with tough legislation. Some people have said in some circles that they are bigger than the government, but no matter what they come with--

Hon. Mr. Bradley: That is true, I have heard that said.

Mr. Pouliot: You have heard that said? Look at the record. If you are floating bonds--

Hon. Mr. Bradley: That is a whole sentence: "That is true," comma, "I have heard that said." I did not say that is true, period.

Mr. Pouliot: Personne parle l'espagnol et on ne peut comprendre.

What I am urging the government to do is to come up and strengthen the rules at the base so it means something. In terms of Inco, of Algoma Steel and Falconbridge, it is entirely a different kettle of fish. The emphasis, the expertise, not only in terms of bulk smeltings at the beginning of the circuit--we have got someone with great expertise telling us about finer grinding, about the operation in the flotation system. I am a flotation operator; I am not a PhD, not an engineer, but I have dealt for 20 years with chemicals in the mill. You do it twice, at the beginning of the circuit and at the end of the smelting process. The less chemical you use, the less will come out.

I encourage your ministry to keep doing what you are doing but to please come up with something that is a little simpler and certainly more enforceable and more forceful. It lacks clout. It means well, it has a sense of direction, but the clout is not there at the end.

Hon. Mr. Bradley: I guess the clout in terms of not meeting the regulation is Bill 112, which you people participated in in the Legislature. That allows for certain penalties for those who do not meet their obligations under the laws of Ontario. Those laws, of course, include the regulations.

It is very interesting to hear the member because he has been on the front lines in terms of the situation in mining, so he understands what is happening probably better than anybody in this committee. I am encouraged by that, because I agree that it can be done, that in fact it can be done throughout the process. He mentions the beginning and the ending of the process, and I do not think we should ever accept the answer that it cannot be

done. I appreciate his expertise in that field, an expertise that is important in that, as you have said, it is not a PhD's expertise, but you have been there at the front line and you know. That is every bit as important, if not more important, because you have seen it in action in a practical sense.

Mr. Pouliot: With all due respect, I respect the people's expertise, of course. Your words are well taken. What I am saying is that from the lab, and what was said by the professor, the distinguished member who appeared who favoured us with his comments--it was extremely well said, and I adhere to that philosophy--you have the kind of research mechanism that may not be the order of the day at this time. There is no provision again, by the way, should technological advances come on stream to change the regulation.

Hon. Mr. Bradley: Governments go on and on. In 1994, the government may pass a new regulation that is even more comprehensive and stricter--who knows--depending on the technology that is available. You and I cannot project that long. We might not even be in the Legislature at that time, in the positions we are in. I want to go to the banking one, if I can.

Mr. Pouliot: I cannot let that go by, with all due respect. I am not a child here. What I am saying very plainly, minister, is that if you are allowed to do something at a hundredth level, given the present technology for a period of years, and you come up with a better mousetrap, you have to go on record that the 100 is no longer acceptable because you have the technology to reduce it to 80. You are not going to favour with me with platitudes.

Hon. Mr. Bradley: It is not platitudes I am favouring you with.

Mr. Pouliot: Come on, you are an educated person. You know better than that. You have to be willing to say, "I, as the minister, am going to change the rules." It is very simple.

Hon. Mr. Bradley: I am not favouring you with platitudes; I am simply favouring you with reality. Down the line, governments have that opportunity, and it will be done if it is necessary. I want to give you the optimistic outlook that I know you want to have in this matter.

Let us go to banking, because you were interested in the banking again. You asked, "Why bother with this banking anyway?" It does at least force it, or at least encourages it, to be under the limit, to work at ways of being under the limit while it is putting its money in the bank, if I can use that. If it were not there, there would be no incentive for it to put its money in the bank. It would simply say: "Let us burn coal at the rate we are burning coal now. We will do it just with the regulation; the banking is not important."

I still go back to the fact that what is most important--and I think the member for Lakeshore (Mrs. Grier) certainly addressed that, as did the member for Brock (Mr. Partington)--is the control mechanism for the utilization of that banking; that it not simply be a routine matter; that there be close scrutiny of it; and that the key provision is going to be the final amount that the government allows to be banked. That still has not been agreed upon. Obviously, Hydro thinks it should be there, and we think it should be here.

Those are all going to be important decisions. Those who have alluded to the fact that down the line there are some important decisions are quite right, in my view. To me, it is better to have the flexibility on the table for you to see than simply to come back later on and say, "We need it now, and

we know there is nothing in the program to do it, but you will give it to us now." If we did not have the bank there, we would be creating the illusion that, no matter what, it was going to meet this level.

By having the banking provision, what we are saying is, "We are not creating an illusion." We would like to see it at this level all the time, but if there are extenuating circumstances, then it might be able to go up based on the fact that you have kept it down below what your regulated level would be in previous years. That is what I am saying to the member, and I think it is better to be up front than it is to do something afterwards. I am certainly mindful of what members of the committee have said about the fact that you believe there should be some kind of scrutiny beyond which perhaps people have contemplated so far of that request.

M. Lupusella: Merci beaucoup, M. le Président. Je suis très heureux que M. Pouliot parle français dans son comité.

Mr. Chairman, I would like to thank you for this opportunity to raise one important point. Mr. Pouliot, of course, raised the issue of certain industries in Ontario polluting the environment and the so-called slogan, "Let us make the rich pay."

It is a nonanalytical position which is not solving the problem, because the problem was not originated by one industry. We have millions of industries causing a problem to the environment. We also have this international problem between the United States and Canada in relation to acid rain.

The minister is well aware of the upcoming summit on April 5 and 6 between Mr. Reagan and Prime Minister Mulroney. He is also aware that the special envoy's report on acid rain has been presented to the United States, and I think the government of Canada has the report as well. He is also aware that a special White House task force has been created to examine what, if anything, Reagan can do about acid rain. Of course, the general feeling or position is that it is a bit sceptical to imagine or to think something very positive will come out as a result of this summit between the Prime Minister of Canada and the President of the United States.

Considering also that Mr. Reagan has opposed every major environmental initiative since he became president, can the minister give us a prognosis of what we can expect from this summit when Mr. Mulroney and the President of the United States meet on April 5 and 6?

Hon. Mr. Bradley: The expectations, I think, were the greatest at the first summit. At that time, the Prime Minister said it was a number one issue, the top-priority issue for the government of Canada in the first summit they had. In the second summit they had, in Washington, it was hoped, because of the efforts of Mr. Lewis and Mr. Davis and the report they presented, the envoy's report, that perhaps we could expect a major breakthrough.

Interestingly enough, many people in the US who are in favour of acid rain controls, and keep in mind I was there just before the summit, said, "Whatever you do, do not have your Prime Minister speak too enthusiastically about what President Reagan is going to suggest."

I think it was the feeling in the federal government at that time, however, that almost anything would be progress and that they could see it at least a first step.

As a result, the Prime Minister and the federal government have been very conciliatory, very accommodating of the American point of view, hoping, I think, and they are justified in being able to hope for this, that they would get a good response. By not kicking the Americans in the shins, by not being openly critical of the administration, by being conciliatory on a number of fronts, they justifiably hoped they could expect a positive response from the United States.

It was a strategy which they employed, I think in good faith, and hoped it would work. It has not worked, unfortunately. I think the envoy's report avenue is a dead end right now, simply because I do not think the administration is committed to it. It could only be seen as a first step.

I would support Prime Minister Mulroney taking a stronger stand, perhaps publicly, as he has hinted at when there was a meeting with Vice-President Bush and in what Mr. McMillan and Mr. Mulroney have had to say publicly in recent weeks and that I have said publicly. I would support a stronger stand, even if it appears to be confrontational and even if it appears to be taking a shot at a good neighbour. You can do that. In a family you are allowed to be critical of one another.

I would support that kind of stand by our Prime Minister. He has not received from the United States what I believe he deserved, and that was a positive response to his conciliatory approach. Now, having used the carrot, the stick is certainly the way to go. If he does that, he may be speaking beyond the President to the people of the United States. If the President responds in kind, great; I am glad to see it. I am not optimistic that will happen but if it does, that is good stuff. If it does not, at least the Prime Minister will have spoken to the American people and expressed a concern of a longtime neighbour and good friend of the US.

I am not overly optimistic of the results of the summit, but I always think it is worth while having these discussions on the highest level, which is the President and the Prime Minister.

Mr. Lupusella: I would like to thank the minister for the answer in relation to this international problem affecting Canada and the United States.

I have another local problem which is affecting Ontario Hydro and the use of coal. We understand Ontario Hydro is taking particular measures not to use coal as a way of producing electricity. If I recall correctly from four or five years ago on another select committee of the Legislature studying the operation of Ontario Hydro, there was a good program that was supposed to be implemented. This was the use of turbines and water to generate electricity. At that time, there were a number of presentations from Ontario Hydro's officials that they would increase the production of electricity by using turbines, with which there is no pollution, like the Quebec experience.

What has Toronto Hydro been doing in relation to this infrastructure or process of the implementation of the use of turbines in the province to produce electricity? Under the previous administration, General Electric closed plants in Scarborough in which they were producing turbines, as I understand it. Do you have any idea what Toronto Hydro is doing in relation to that?

Hon. Mr. Bradley: I cannot speak directly to Toronto Hydro or Ontario Hydro as such, except to say I would very much encourage them to move in that direction. You will recall that on many occasions, the Minister of

Energy (Mr. Kerrio) has expressed hope about the development of smaller water projects. When everyone develops those, they certainly solve one environmental problem--that is, less reliance on coal or even on nuclear power--but they can still cause some localized problems in terms of water. That is why we as a ministry have to look carefully at each one of these as they are put before us to determine whether they would have that detrimental effect.

I guess the relatively short answer to the question is that we as a government would encourage Ontario Hydro and local authorities to develop projects which would use water power to produce electricity, as long as that project is not going to have a detrimental effect. In the city of St. Catharines, St. Catharines Hydro is developing a small project in Port Dalhousie. It is small. It generates a little bit of electricity but every bit helps, and it means we do not have to stoke up the coal plants as often. That is a suggestion which our Minister of Energy would want to press on with.

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Mr. Chairman: Mrs. Marland has our last question of the morning.

Mrs. Marland: That is indeed a privilege.

It has been interesting this morning to note that all the questions of the members of the government on this committee, except the second question of Mr. Lupusella--

Hon. Mr. Bradley: I think I hear a partisan comment coming.

Mrs. Marland: Yes, you do.

Hon. Mr. Bradley: That is unusual.

Mrs. Marland: It is the first time that they have had a turn this morning, and all the questions have been based on what the United States is doing. Knowing that 50 per cent of the problem is our own, I feel strongly that if we were to eliminate our own problem, the people who live in Ontario would be 50 per cent better off.

Hon. Mr. Bradley: That is decidedly so.

Mrs. Marland: Certainly, the environment would be better off, and therefore the people would be better off.

Hon. Mr. Bradley: That is why we brought in the regulation.

Mrs. Marland: You said earlier this morning, "Listening to this committee is the best way to deal with the legislation." I guess we should be flattered, because I think you would agree that there are no members of this committee who could qualify as technical specialists in terms of the operating of Hydro's coal-fired plants. I would think you would agree the responsibility is with the ministry. It is not with this committee. This committee is not here to tell the ministry how to do its job; it is here to be part of a whole process in the areas we look at.

With all the fanfare of Countdown Acid Rain when it was introduced, I am not convinced from what I have heard, either this morning or in our other deliberations, that the Ministry of the Environment is in the driver's seat.

You have given the provision of banking to Ontario Hydro. You have even gone as far as to say to Hydro, and it was confirmed again this morning on page 5 in the last paragraph, that the proposed process for operating that bank and the bank managing procedures will be brought back to you by Hydro.

Hon. Mr. Bradley: By Hydro?

Mrs. Marland: Yes. It says here, "Regulation 662/85 provides that Ontario Hydro must report back on a proposed process for operating the bank by December 31, 1988."

Hon. Mr. Bradley: That is right. Then we will determine whether that process is fine or not.

Mrs. Marland: It goes on to say, "There appears to be some feeling that it would help Ontario to have the bank managing procedures available before the end of 1988." I would humbly and respectfully suggest that, first of all, the bank managing procedures must be the responsibility of the ministry, not Ontario Hydro, because the ministry has to be in the driver's seat.

Hon. Mr. Bradley: They are not the responsibility of Ontario Hydro. Do not be silly. It is not Ontario Hydro. They come to us and we are the ones who determine it. Ontario Hydro can make a proposal; you can make a proposal. We are the ones who ultimately make the decision. Hydro is not going to dictate that. There is nobody in here who believes that. Maybe you do.

Mrs. Marland: All right. Why is it that Hydro has to report back to you? Why is it that you are not telling them? You are giving them the bank. Why are you not telling them the rules of the bank? It is a simple question.

Hon. Mr. Bradley: Each of the people involved in it must report on an ongoing basis. What makes them accountable is forcing them to report. Perhaps you do not want them to report. Perhaps you prefer that we sit and wait until the last minute and then say: "Okay, here is the last minute. We are in a crisis." We are requiring them to report on an ongoing basis. That is a positive advantage of it. I just do not understand what you are getting at.

Mrs. Marland: I would not be so rude as to say to you, "Do not be silly," as you have just said to me. I will say to you respectfully that the Ministry of the Environment should be in the driver's seat in Countdown Acid Rain. You said earlier this morning that control mechanisms will come down the line. What I am asking you is, how can it work?

You heard Mrs. Grier make the very valid point about needing reaction to Hydro's wanting to draw from the bank. When they want to draw from the bank, God forbid that it will be under this catastrophic clause you seem to think it can be. My feeling is that we know they cannot drop in these abatement controls in overnight. You heard Mrs. Grier say it will be four or five years with assessment. You are treating the subject as though it is something such as Hydro needs it now. They have to exceed even what they have in the bank, perhaps because it is a catastrophic situation; so overnight we will drop in the abatement controls, which we cannot, because it is something that has to be planned for.

I want to know why the proposed process for operating the bank is not in place now. Do not tell me again that they have to report every year. We know that. We know they have to report every year.

Hon. Mr. Bradley: Twice a year.

Mrs. Marland: In your own statement it says, "a proposed process for operating the bank." That report will be coming back a year and a half from now. Why is that process not in place? If the bank is so good and if the bank can work and still protect the environment, why is the process not in place now and why is the ministry not setting up the banking rules?

Hon. Mr. Bradley: We will be setting up the banking rules. Whatever proposal Hydro makes to us, we will be setting up the rules. You people will be making your recommendations to us. We will look at your recommendations.

Mrs. Marland: This committee is going to do your work?

Hon. Mr. Bradley: You cannot have it both ways, though. You cannot say, on the one hand, that the government does not listen to the other parties or does not listen to members of the Legislature and then turn around and say, on the other hand, "Well, you do it and do not listen to us." I am giving you this opportunity because I think it is right that members of all committees should have this input. I do not simply say, "Forget about whatever the opposition has to say or whatever the government members have to say." I think you want that input.

That does not mean I implement everything you want, but surely you would like this committee to be assured that we will be at least giving consideration. It is not a matter of your doing my work. It is getting the input from duly elected people from various constituencies in Ontario. If you prefer that I simply ignore the committee and do whatever I think is appropriate, then there is no need to have this committee. I do not think anybody here will agree with that.

Mrs. Grier: Let the record show that the Legislature gave this committee the opportunity to review Countdown Acid Rain. I suspect that if the minister or some of his supporters had had their way, we would not have met for a long time and we would have gone traipsing over the US doing the public relations job.

Hon. Mr. Bradley: I think you are doing a great job.

Mr. D. R. Cooke: Are you suggesting Mrs. Marland is a supporter?

Mrs. Grier: We do not have much time, but perhaps we could get something in writing from the ministry. We have not in any of this discussed small sources. It was pointed out to us by one critic that, by 1994, 25 per cent of the SO₂ would come from sources other than the four major polluters. I know the existing regulation controls new small sources. Could you either give us briefly now or in writing later what plans you have for the retrofitting and control of existing small sources?

Hon. Mr. Bradley: Okay. There are two things to deal with the small sources. The first is that regulation 308 is being upgraded, just as the water pollution regulation is now in effect, or at least that program is in effect. We are in the public consultation process. We will be producing a green paper very soon, as a matter of fact, upgrading our 18-year-old air regulation. In the upgrading of that air regulation, that will be exceedingly useful in meeting part of this problem.

The second in the Countdown Acid Rain program is the new boiler regulation.

Mrs. Grier: That is the new regulation. I am looking at existing polluting small sources. Will regulation 308 go some distance towards reducing SO₂ and NO_x emissions from existing sources?

Hon. Mr. Bradley: I think that will be addressed to a very large extent in regulation 308, which will be an upgrading, strengthening and updating of the air pollution regulation, in addition to the boilers, the new ones or modified ones, as I understand it. I think that is something to consider, that while we have hit the four major polluters, and they certainly are that, we want to look at all sources. That is why the general regulation 308 will be useful in that regard.

Mr. Chairman: Thank you for appearing before us this morning.

Hon. Mr. Bradley: Thank you kindly for the questions. I hope I have not sounded too partisan.

The committee recessed at 12.10 p.m.

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SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, MARCH 12, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Cooke, D. R. (Kitchener L) for Mr. Henderson
Lupusella, A. (Dovercourt L) for Mr. G. I. Miller
McLean, A. K. (Simcoe East PC) for Mr. Eves
Pouliot, G. (Lake Nipigon NDP) for Mr. Charlton
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witness:

From Environment Canada:

Manson, A. N., Senior Manager, Long-Range Transport of Air Pollutants, Issues
Group
Martin, H., Senior Adviser, Federal LRTAP Liaison Office

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, March 12, 1987

The committee resumed at 2:08 p.m. in committee room 2.

ACID RAIN
(continued)

Mr. Chairman: Good afternoon, members of the committee. I would like to proceed. There has been a request that we take a few minutes at the end of the afternoon to go in camera to give some direction to our researcher, not with respect to our final report because, of course, we have another couple of days coming up, April 15 and 16, but to give him some direction as to anything that we might like him to concentrate on with regard to providing us with information over the two and half or three weeks that we are off before we come back on April 15, so if everybody would remember to stick around for that.

Just before I introduce our guests this afternoon and before I have Mr. Partington make a few comments, as he had requested this morning that he might like to do at the beginning of this afternoon's proceedings, I would like to go over for the committee's benefit what we have now finalized as our schedule when we are back on April 15 and April 16.

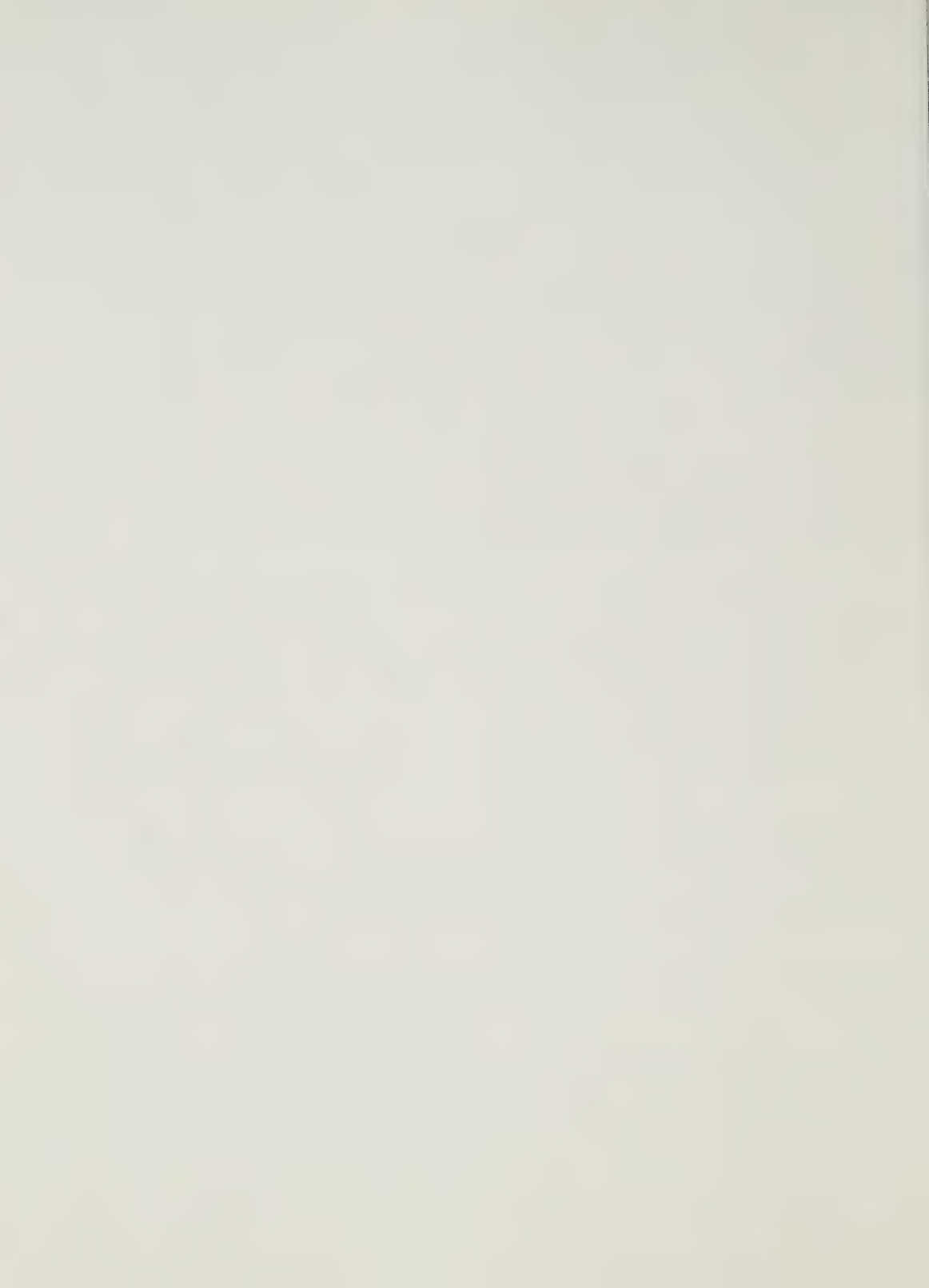
On the morning of April 15 we have Ed Hanna, a consultant, appearing before us to provide a critique of the acid rain program. The Ontario Medical Association will be appearing to provide us with the benefit of a resolution that its public health committee has passed with respect to some suggestions to make to this committee on the health aspect problem of acid rain emissions. That was arranged because of a letter it had forwarded to us and also because, as you may be aware, we have been trying to contact Dr. Bates who had published a report on the health problems. We are still hopeful we will be able to have Dr. Bates here on the afternoon of April 15 when the Canadian Coalition on Acid Rain is here. It had indicated that it would try to help us arrange contact, and we are hopeful that we will be able to do that.

The coalition has also requested that there is at least one other witness that it might like us to hear from. It appears that there may be a scheduling problem, so my suggestion to the coalition has been that if it could find time during its presentation to have that witness or any other witness available, we would be willing to hear from them.

I should indicate that if there are any other witnesses that anybody is aware of who might want to appear before us, because of our time problems, they might want to submit their brief in writing to us over the next couple of weeks.

On April 16, Algoma Steel will be here in the morning. In the afternoon we have Dick Wegman coming up from Washington to present to us the American perspective. I would like to reserve the latter part of April 16 for us to go in camera to provide our researcher with direction as to input into a draft report that we can review when the House leaders give us leave to sit once the House resumes again.

I wanted to go over that scheduling with you, because it has been just



in the last couple of days that we have been able to finalize it.

Mr. Partington, you wanted to make a statement.

Mr. Partington: Yes, I want to make a short statement dealing with procedures. Obviously, all of us on this committee are concerned about the environment. We are concerned about pollution and the effects it has not only on trees, lakes and wildlife, but certainly also on human health. Particularly with respect to acid rain, we are looking to polluters to come up with a better method of encouraging them to cut down on their pollution.

I find that inconsistent with the committee where, in a room as confined as this, there is extensive smoking going on. I would like to move a resolution--not this afternoon, because I think it probably should have some debate, but I suggest that it be reserved for the beginning of the next meeting. I would like to move a resolution really to show that we are also concerned about pollution and the environment, particularly with respect to human health. I would like to move a resolution at the beginning of the next meeting to provide time for debate--otherwise I would move it today--that while the select committee on the environment sits, there be no smoking in the room.

Mr. Pouliot: M. le président, si je peux dire un simple mot: I have to acquiesce to the pristine and candid, bordering on the evangelical. I fail to see what relevancy my antiseptic friend seems to have. However, in view of the health of the majority, I will not. I see the voting--

Mr. D. R. Cooke: You should second the motion.

Mr. Pouliot: It appears I will have to second the motion.

Mr. Partington: I would be prepared to deal with it today.

Mr. Chairman: Mr. Partington, it sounds as if you are not going to get much more debate on the resolution. We do not have to accept it as a notice of motion, I think we can accept it as a motion. If the motion has been seconded, I would like to ask the committee to vote on the motion. All in favour?

Mr. McLean: Just a minute. I think we should have a discussion on the motion.

Mr. Chairman: I did not want to cut off debate. I did not anticipate much, but perhaps there will be.

Mrs. Grier: You did not want to have a debate.

Mr. McLean: It should be made very clear. I have not observed much smoking over the period of the debates that have gone on. I smoke a pipe, but I think I have smoked it in committee only once over the past two weeks. I do not think that has really offended anybody, but there are people who may like to have a cigarette who have rights as well as anybody else.

I do realize it is an environmental committee, but if you are going to have a motion, it should be made for all committees; it should be something that is done in the Legislature. If you want to stop smoking in the building, that is fine. It should be debated and passed by a majority.

When you have a motion in a committee when you see an opportune time for it to pass, I do not agree with that. You should have a full committee here and a full discussion on it.

Mr. Partington: That is why I would be prepared to put that off until we sit again.

Mr. Chairman: Mr. Partington, do you wish to--

Mr. Partington: I will put that off until the 15th.

Mr. Chairman: Until the 15th? Mr. McNeil, your arguments were listened to.

Mr. McLean: McLean.

Mr. Chairman: We will wait for the 15th for the vote.

I would like to welcome Alec Manson from Environment Canada and his colleague Hans Martin. I believe you have a handout. I guess it has been handed out to everybody. Mr. Manson, I turn the proceedings over to you. You may proceed.

Mr. Manson: First of all, I want to thank you for the opportunity to come and discuss with you acid rain as we see it from the federal level and perhaps to provide you with what insight we can into what is going on in other parts of the country and also our dealings with the United States and to offer some comment on what is happening here in Ontario.

You have probably heard from other people on some of the effects acid rain is causing in Ontario, so I will quickly provide you with a little insight into what is happening nationally.

We estimate that in eastern Canada there are about 300,000 lakes that are vulnerable to acid rain. Some 14,000 are estimated to be acidified. We have 50 per cent of our productive forests that are receiving too much acid rain.

People were mentioning health effects. More than 80 per cent of the population in eastern Canada lives, works or spends leisure time in areas where acid rain levels and precursor pollution levels are relatively high, and, just as around here, acid rain is damaging buildings and monuments throughout a lot of areas in eastern Canada.

We estimate that the natural resource base that is at risk from acidification sustains about eight per cent of Canada's gross national product. Therefore, it is quite a significant economic problem if we do not get all the control measures required in place in Canada and do not succeed in persuading our American friends to do what we believe needs to be done to solve our problem.

We have established some pretty clear objectives, in consultation with the provinces, on what we need to do to resolve the acid rain problem. You may have heard some of these numbers before, but I would like to repeat them. We have to get the acid deposition levels in all vulnerable areas in eastern Canada down to below 20 kilograms per hectare per year. That is about 18 pounds per acre.

This objective is not something we pulled out of the hat or anything like that. It is derived from a wealth of scientific information on the effects of acid rain in Canada and is also supported by a lot of scientific information from other countries such as the United States and Europe.

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To achieve this objective, there are two major things that are required. The total sulphur dioxide emissions in eastern Canada--and that is from the Saskatchewan-Manitoba border eastward--must be reduced to about 2.3 million tonnes. That is about 50 per cent of the 1980 level. The objective is not a 50 per cent reduction; it is to get down to the 2.3 million tonnes. If we would have had more than 4.6 million tonnes in 1980, we would still be working towards 2.3 million tonnes. I know the media stresses the 50 per cent reduction, but the operative number from an environmental perspective is getting down to 2.3 million tonnes.

We worked everything from there. We worked everything from the 20-kilogram objective, and it is all back calculated to give us what we need to do to achieve it.

The other thing that has to happen in concert with the efforts that are going on in the seven eastern provinces to get down to the 20-kilogram figure is a reduction to about two million tonnes a year in the amount of sulphur dioxide originating in the United States that flows across the Canada-US border. In 1980 it was about four million tonnes. Therefore it needs to be cut by about 50 per cent. That does not mean a 50 per cent reduction in emissions in the US; it means a 50 per cent reduction in the amount of pollution crossing the border and ending up in eastern Canada.

In terms of efforts in eastern Canada, in February 1985, the federal government and the seven eastern provinces agreed that emissions would be reduced to 2.3 million tonnes. There was a series of initial provincial ceilings or limits established at the February meeting. The provinces all agreed to enforce these limits through their own legislation, and they agreed that they would achieve the emission limits by 1994, at the latest.

The handout you have in front of you is not exactly what was agreed to in February 1985. In the February 1985 agreement, Ontario specified that it would reduce to 1.03 million tonnes. Since that time, we have moved beyond that, to 885,000 tonnes. The table and the handout is basically the current status of the allocations.

You will note that we are still 175,000 tonnes short of our objective. Among the eight governments involved, ministers have committed themselves to allocate the remaining 175,000 tonnes of emission reductions in time to achieve the 2.3 million-tonne objective by 1994. There are still 175,000 tonnes kicking around that need to be allocated.

I will do a quick run through of the status of things against the table that is on page 3 of the handout. Both Quebec and Ontario have introduced regulatory programs to meet the commitments they have made. Manitoba has recently issued draft regulations to achieve its commitment. I believe the comment period on their draft regulations closes the middle of April, and we understand those regulations will be finalized by the summer. Manitoba has indicated what it will do to achieve its reductions.

Newfoundland and Prince Edward Island have demonstrated through the

existing air pollution control regulations in those two provinces that their commitments will be achieved by 1994.

In summary, we have about 90 per cent of what needs to be done, in either regulatory or program form.

As part of the agreement that was reached among the eight governments in February 1985, the federal government indicated a month later what it was prepared to do as its part of the bargain. The federal government allocated \$25 million to cost share technology development and demonstration work at nonferrous smelters. It indicated it would provide up to \$150 million to cost share smelter modernization and pollution abatement actions that were required to achieve the emission reductions that provinces were committed to. It indicated it was providing \$70 million for clean-coal technology demonstration work and \$18 million a year to the federal research program. It also indicated we would move to tighten our motor vehicle emission standards by September 1987.

A lot of work has been done under the smelter modernization program. New processes have been demonstrated for a smelter at Flin Flon, Manitoba, for the Hudson Bay Mining and Smelting Co. Inco and Falconbridge have a number of projects going on which are being funded under the industrial and regional development program of the Department of Regional Industrial Expansion. We understand that those projects will be completed in time for those two companies to make the decisions on exactly how they propose to achieve the prescribed emission limits by December 1988.

In terms of the \$150 million for assistance for smelter modernization, to date, only Noranda has brought forward a specific request for assistance. A cost-sharing, tripartite agreement among the federal government, Quebec and Noranda is in the final throes. The i's are being dotted and the t's crossed, and it will be signed very soon. Under this agreement the federal government will be putting in approximately \$41.7 million, which will be matched by contributions from Quebec.

Recently, in addition, the federal cabinet authorized that in the agreement with Ontario the federal government was prepared to provide up to \$85 million for cost-sharing actions in Ontario and up to \$20 million for cost-sharing actions in Manitoba. These contributions have to be at least matched in individual projects by provincial contributions.

There has been a lot of work done under the coal utilization program of the Department of Energy, Mines and Resources. The bulk of that has gone on in Atlantic Canada, to demonstrate new clean technologies and to get that area further into a position where it can move off oil.

One of the more interesting things we have discovered in our research and monitoring program over the last several years has been that with the actions taken to reduce emissions in eastern North America over the past 15 years or so, deposition down in Nova Scotia has been reduced to this 20-kilogram figure. We are now seeing some chemical recovery of the river systems down there. It is the first clear evidence we have had that our objectives, what we believe needs to be done is actually happening in the real world. In other words, to use that parlance, we have some smoking-gun evidence that things should unfold the way we want them to unfold.

I mentioned earlier that the federal government had committed to tighten up the motor vehicle emission standards for light-duty trucks and cars. This

has been done, and, effective September 1 of this year, the standards will be identical to the US standards. We are also looking at tightening up the standards for the heavy-duty vehicles. Until January of this year, we anticipated that the effective date would be 1988. However, a court case in the United States has delayed the effective date of US regulations by one year. We are looking at the implications of that for Canada. We may have to delay ours by a year as well.

We have estimated on an annualized basis that all the actions being taken in eastern Canada will cost the private sector and provincial utilities approximately \$500 million a year over the next 20 years. In the handout I gave you, that \$500 million is calculated in 1982 dollars, because that was the base year for all our calculations. If people have been referring to numbers larger than that, it is quite possible that some of the numbers are slightly larger, because those are 1982 dollars.

Just to go on for a moment in terms of the status of various things, I am sure many of you know that the federal Minister of Environment is currently engaged in negotiating federal-provincial agreements with the seven eastern provinces, to ratify the accord that was reached in February 1985.

Agreements have been signed with Ontario, Prince Edward Island and Newfoundland. An agreement with Quebec is anticipated within the next two weeks. The negotiations with Manitoba are very well advanced. We anticipate reaching agreement with that province shortly. I am sure many of you have seen in the newspapers of late, particularly this week, that there are some considerable difficulties with New Brunswick and Nova Scotia, and I do not believe we will be reaching agreement with them in the next two or three weeks.

The basis for the agreements that the federal government is negotiating with the provinces is not really to move beyond the accord that was reached in February 1985, but rather to ratify it, to provide some formal mechanism to cement this deal among the eight governments and hold it together as a compact. We are not moving beyond what was in the accord with these agreements.

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I was asked what federal views we might have on what was going on with Ontario's program. Certainly, the documentation we see on the Ontario program is that it is all on schedule and everything should be in place by 1994, based on the reports that have been provided to us. In terms of the level of effort that is going on in Ontario, the reductions to 885,000 tonnes constitute 55 per cent of the total reductions that will be required in eastern Canada.

As Mr. McMillan said when he was down here on Tuesday to sign the acid rain agreement, the emission reductions in Ontario are really the centrepiece of the Canadian abatement program. Add to that Quebec, and you obviously have the bulk of what is going on here in the country in terms of acid rain emission reductions. I wish things were going as well with the United States. I will give a little history for a moment, if I do not bore you.

In 1980, Canada and the US formally signed a memorandum of intent in which the two countries formally agreed that they would negotiate a transboundary air pollution agreement. The negotiations under that memorandum of intent broke off in June 1982, when the US rejected a proposal by the Canadian side that we should negotiate specific emission reductions under the agreement that was contemplated by the memorandum of intent. There were no formal discussions or negotiations with the US over the next two years,

although there were a number of informal meetings and constant contact with the US.

This stalemate--I think it is a fair way to put it--was broken at the Quebec summit in March 1985, when the Prime Minister and the President agreed to appoint the special envoys to look at the acid rain issue and, as they were instructed, to seek out areas where some progress could be made and where differences between national positions could be narrowed. For all the caustic comments that have been made about the envoys' report, it did provide us with a number of very useful things. The envoys, both Mr. Lewis and Mr. Davis, were able to agree that acid rain was a serious problem in both countries and that it was a serious transboundary problem.

Their major recommendation was that the US implement a five-year, \$5-billion, control technology commercial demonstration program that would have two main purposes. The first one was to expand the so-called menu of control options that would be available to design an acid rain abatement program in the US, and the second was that this program be implemented in a manner that would reduce to the fullest extent possible the amount of pollution generated in the US and coming across the border into Canada.

The envoys themselves recognized that their report was not the end of the road, but rather the beginning of the road and pointing us in the right direction. Very early on in their report they spoke of the need for the two countries to build on a number of precedents, such as the Great Lakes water quality agreement, to design a bilateral accord to deal with the problem in a lasting manner.

Last March, President Reagan and the Prime Minister fully endorsed the envoys' findings and recommendations, and President Reagan undertook to seek to provide the funding the report had recommended. At the same time, the Prime Minister, again picking up on what the envoys had said, noted that he felt we now had an agreed foundation on which we could build towards a solution. The administration's 1988 budget proposal provided us with the first opportunity to see how the US was honouring the commitments President Reagan had made.

Mr. McMillan asked us to do a very careful examination of all clean-coal technology initiatives that were outlined in that budget proposal, and I will just quickly run through what we concluded from that. We concluded that, of the approximately \$6.8 billion in expenditures that the US was forecasting between now and 1992, about \$5-billion worth of those expenditures met one or more of the special envoys' criteria that they had laid out. There was about \$1.7 billion in projects that we felt met all the technical criteria.

However, for the criterion of most importance to Canada, that being the reduction in the amount of pollution coming across the border, the US initiatives failed completely to pass the test. Our best calculations are that the sum total of emission reductions and reductions in transboundary flows that would happen between now and 1992 under these initiatives would be perhaps 50,000 to 60,000 tonnes, which, with a transborder flow of four million tonnes, is inconsequential. We concluded that they completely failed to pass that test.

We also concluded, based on the information that had been provided to us, that in the absence of some acid rain control program being implemented in the US, the new technologies that were being designed and could be commercially available in 10 to 12 years would probably not be utilized for at least the next 25 years.



Therefore, we would not see any major reductions in the transboundary flows under the current circumstances before the year 2010. At that time, many of the existing power plants in the US will be about 30 to 35 years old and they will require major refurbishment. Perhaps at that time, given current circumstances, some of the new nonpolluting technologies might be used. It was not a very rosy picture we painted for ourselves when we analysed those initiatives.

I would like to close off by indicating to you what our expectations or objectives are in terms of dealing with the US on the acid rain issue. I mentioned earlier that, in order to achieve the 20-kilogram figure, the transborder flow of pollution from the US into Canada has to be reduced to two million tonnes. We would like to get the US to agree to that target, and we would also like to get them to agree to put in place a program or programs to reduce the flows to this level on a scheduled basis; in other words, to agree to the target and to some schedule to move us towards that target. The target is not a very negotiable item, because it is precisely what we feel from an environmental perspective is required, but the schedule is a negotiable item.

As a step towards this objective, and consistent with the envoys' report, we would like to see full implementation of the envoys' recommendations in a manner that provides the maximum reductions in US emissions affecting Canada. Again, these objectives are not things we have pulled out of a hat or found under a rock or anything. We believe they are based on sound scientific information and flow naturally from existing principles and obligations under international law, the kinds of things that were used to design the Great Lakes water quality agreement.

It is rather ironic to note that in the recently signed US-Mexico agreement on transboundary air pollution, one of those principles--principle 21 from the 1972 Stockholm declaration--is one of the cornerstones of that agreement.

The objectives we have with the Americans also extend very naturally from what the envoys envisioned. Their report itself contemplated undertaking the actions necessary to reduce the flow of pollutants across our border.

I will leave you with that and continue to try to answer any questions.

Mr. Chairman: Thank you very much, Mr. Manson.

Mrs. Grier: I have a number of questions. I found this interesting, and much of it is very new to me, especially the figures. What has happened since 1980 with the four-million level? Has it been growing or declining? What is the actual figure today?

Mr. Manson: It has been declining. I believe it is about 3.2 million tonnes today.

Mrs. Grier: To what do you attribute that?

Mr. Manson: Some of it I have to attribute to reduced economic activity, particularly perhaps in what we affectionately refer to as the rust belt in the United States, the midwestern part of the US. Emissions are down there; in terms of transboundary flows, there has been a fair reduction as a result of that.

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Mrs. Grier: I-guess that is the same as we have been seeing here with Inco and Algoma meeting the targets because of lower production levels.

Mr. Manson: Yes, I think it is in the handout. In 1980, we exported to the US about 1.5 million tonnes; in 1984, that was down to about 1.2 million or 1.1 million tonnes or something like that.

Mrs. Grier: So we are sending less. We heard some testimony from an earlier person on the figure of 20 kilograms per hectare on which all of this is based and which you said was what you worked back from. The person said that at least in one of the states, there was discussion of reducing that level to, I think, 11.

Mr. Martin: Minnesota.

Mrs. Grier: Are you considering that or is that 20 figure still a valid target in the light of new research?

Mr. Martin: The target figure of 20 kilograms specifies that this level will protect moderately sensitive aquatic systems, meaning lakes. If a lake is very sensitive that level will not be protective, so the target has built into it the caution that not all aquatic systems are being protected. The moderately sensitive ones are.

Mrs. Grier: When was that figure accepted as the standard?

Mr. Martin: It was developed and published around 1982 by Canadian and US scientists. The document that contains that number was released by both governments, but the US wrote a separate statement addressing that number in the document.

Mrs. Grier: Addressing it in what way? Challenging it?

Mr. Martin: It did not accept it. It did not challenge the veracity of the number; it did not accept the number.

Mrs. Grier: As a target.

Mr. Martin: Yes. In Minnesota, the target, if I may add--

Mrs. Grier: That is the one we heard about.

Mr. Martin: --is lower and it is my understanding that it is designed to protect all aquatic systems.

Mr. Manson: It might be useful to add that I think we estimate approximately three per cent or so of the aquatic systems in eastern Canada would fall into that sensitive category and would not be protected by the 20-kilogram target.

Mrs. Grier: That 20-kilogram target does not take into account at all additional stress on forests or human health?

Mr. Martin: It is designed for aquatic systems only, lakes and

streams. It was done that way because that was the part of the environment we understood best.

Mrs. Grier: Is work being done now on what the levels ought to be if we are really looking at reducing the stress on forests or looking at human health concerns?

Mr. Martin: The work that is done now could at some time be used to examine and define the target for forests. The forest research is not as far advanced as the aquatic research. It may be some time before we are able to do that. We should also recognize that a reduction in sulphur in the environment from where it is now to 20 kilograms is designed for lakes but should benefit all other receptors under stress due to sulphur-loading. We are moving towards protection of the environment totally by focusing on this target that addresses the lakes only.

Mrs. Grier: Where does the NO_x fit in? This is the 20 kilograms--is it a combination or is it just--

Mr. Martin: It is sulphur sulphate, SO_4 . The NO_x is not involved there at all; the NO_x is not considered important in protecting lakes. The lakes have traditionally been that part of the environment that Canada was most worried about because of the demonstrated deterioration. With the events in forests in Canada over the past four or five years, it is becoming clear that the other half, if you like, of acid rain that embraces NO_x --ozone and so on--now has to be addressed to determine what it is doing alone or together with sulphur compounds to cause stress on forests.

Mrs. Grier: Is your department doing that kind of work?

Mr. Martin: The federal government is doing it. The forestry service now is in the Department of Agriculture.

Mrs. Grier: What you are saying is that we really do not know. We have the 20 kilograms per hectare for sulphate; we do not have a standard for NO_x .

Mr. Martin: Not an environmental standard of the same kind; no, we do not.

Mrs. Grier: What is the target you are shooting at then on what you can stand with your auto emission standards?

Mr. Martin: We are not addressing auto emission standards in the same way. We do not have an environmental target. We are leading the United States.

Mr. Manson: May I add a comment on that? As Hans mentioned, one of the questions we were constantly asked in the US was, if we were so concerned about acid rain and that kind of thing in Canada, why were our new vehicle emission standards much laxer than those in the US? From that perspective, there was perhaps ample reason to do something about it.

While sulphur emissions in Canada, even without the acid rain abatement effort, were not projected to rise very much, unfortunately, nitrogen oxide emissions were forecast to rise rather dramatically in both Canada and the United States. Indeed, the effort going into tightening up new motor vehicle

standards is not going to reduce the total nitrogen oxide emissions one little bit; all it is going to do is slow down the rate of increase.

Mrs. Grier: Why are they increasing?

Mr. Manson: They are increasing from more fuel combustion. They are continuing to climb. We are going to reduce emissions from motor vehicles by 45 per cent by the year 2000. In doing that, all we are managing to do is cut the increase in NO_x emissions down to 12 per cent over that same period.

Mrs. Grier: None of the regulations we have been talking about do anything to deal with NO_x.

Mr. Manson: The regulation that was issued to Ontario Hydro contains a NO_x component as well. It has a whole bunch of things in it. There is an SO₂ requirement and an SO₂ plus NO_x requirement in that regulation.

Mrs. Grier: Can you expand a bit on the rather worrisome implication of your comments about the effective date of new standards for the auto emissions? What is the court case and why should we worry about a US court case?

Mr. Manson: I have not had a chance to talk to my colleagues, and I should have done so before I came here, about the ins and outs of the court case in the United States.

We were looking at putting our heavy duty vehicle emission standards on the same time scale as the changes in the US standards. With this court case, which is going to delay the implementation date of the US standards by approximately a year, to be quite candid about it, we could set up a very peculiar situation where for a one-year period there would be a more stringent standard in Canada, yet nine out of 10 trucks that are manufactured in North America are going into the US market and not into the Canadian market. We are looking at what the implications of that would be over that 12-month period to see whether it is a good idea to do it or not. We will have to see what it looks like to us.

Mrs. Grier: Have we not lived for years with the reverse, with stringent controls on automobiles in the US and none here?

Mr. Manson: Yes, and we bore the benefit of that. Even during that period, approximately 75 per cent of the cars that were sold in Canada met the US standards because it was not cost-effective to change them. When they came off the assembly line, many of them had US specification equipment on them.

Mrs. Grier: Do we not owe it to the Americans therefore to send them cleaner trucks?

Mr. Manson: We are looking into it. We are trying to determine what kinds of problems we might face in that one-year time frame.

Mrs. Grier: That will be the clarion call this morning from our minister. We are concerned about the health of American children, so they will be useful to our bill by encouraging you to speed that up.

What is the breakdown in auto emissions as opposed to heavy duty vehicle emissions?

Mr. Manson: I do not remember my statistics and I may have to correct this for you when I get back to the office and find I am slightly out. Light duty vehicle emissions for NO_x are about 22 per cent. I think it is around 12 per cent for heavy duty vehicles.

Mrs. Grier: I see. Of the total NO_x emissions, how much is automobiles and how much is heavy trucks?

Mr. Manson: It is about 22 and 12. If you include all vehicles and off-road vehicles, whether they fly, float or whatever, just over 50 per cent of NO_x emissions come from some form of transportation and just under 50 per cent come from stationary fuel combustion.

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Mrs. Grier: Do the agreements you have just signed with Ontario and the other provinces have within them any opportunity for public scrutiny, hearings or review?

Mr. Manson: They have no specified opportunities for public scrutiny, if you mean that in the context of a hearing or something like that. The agreements do call for annual progress reports to be provided on what is being done in terms of implementation of the abatement actions and reports on research and monitoring findings.

Mrs. Grier: What kind of a process do you see those reports going through? Are they going to be made available to the public? Are people going to have an opportunity to comment on them? What is going to happen to them?

Mr. Manson: I see them being made available to the public. The agreement specified that these reports would be prepared--I must admit I do not think it specifies in the agreement that they be made publicly available. I think the concept of the preparation of these progress reports was to make them available to the public.

Mr. Chairman: I wonder whether you might comment on Noranda. I notice you have signed an agreement with them to provide somewhere around \$42 million for smelter modernization and technology. What are they doing that Falconbridge or Inco is not?

Mr. Manson: I will take you through the situation there. Noranda is a slightly different kettle of fish from either Falconbridge or Inco in that, to start with, along with Hudson Bay Mining and Smelting in Flin Flon, Manitoba, it has the dubious distinction of being one of the two completely uncontrolled smelters in Canada. The regulation that Quebec issued to Noranda is considerably different from the regulations that have been issued to Inco and Falconbridge in that Quebec specified the technology that Noranda had to use, specified a level of containment of sulphur dioxide, plus it specified the technology.

Noranda must build, to use the terminology, a double-contact acid plant that is 96 per cent efficient and must remove 50 per cent of the SO₂ from the reactor gases. Noranda's process is a little different from Inco's and Falconbridge's. It is a much different regulation. It also has a somewhat shorter deadline on it in that Noranda must reduce its emissions by 35 per cent by 1989 and 50 per cent by 1990. There was no room for any technology demonstration work in that regulation.

Mr. Chairman: Perhaps as far as some of the other provinces are concerned, the ones that you are close to signing, if you have not already signed accords or agreements with them, do you have a feel or knowledge of the kind of technology that the companies in those provinces are introducing?

Mr. Manson: I will try to summarize that for you. I mentioned the \$25 million the federal government had set aside for cost-sharing technology demonstration projects in Manitoba. The Hudson Bay Mining and Smelting smelter in Flin Flon has a copper and a zinc circuit. It is a little bit like Inco, with a copper and nickel circuit in its smelter. On the zinc side of the process of their smelter flowsheet, a completely new technology has been demonstrated. Virtually all of the smelting technologies used in Canada are pyrometallurgical technologies where you actually burn the impurities out of the ore.

Hudson Bay Mining and Smelting has successfully demonstrated on a commercial scale a hydrometallurgical process where the zinc will be leached out of the ore with a liquid solution. There are no emissions from that process at all. I caution you, that does not mean that hydrometallurgical processes are a panacea or anything. Inco and other smelters have tried them. It does not work on their ores.

Mrs. Grier: Where does the water go after it is leached out?

Mr. Manson: It has to be treated, and it will be treated. At the Inco smelter at Thompson, Manitoba, I believe Inco will be able to reach the new emission limits at that facility by optimizing the pyrrhotite rejection on that process. They are running it fairly well right now and I think they can get enough further rejection to meet the regulated levels. That is basically the run through the smelters.

Mr. Chairman: In Manitoba then, is Inco being directed as to the technology?

Mr. Manson: No. With the draft regulations in Manitoba, the only thing that is dissimilar to the approach in Ontario is that there is no date in those regulations by which the companies have to specify the technology they will use. There is a series of steps in terms of emission reductions, dates and levels up to 1994. It says, "Thou shalt, by such and such a date, have no more emissions than X."

Mr. Neufeld: I thought it would be good to clarify the target loading factor of 20 kilograms per hectare. Is there any evidence since 1982 that it might ultimately have to be revised downward at some future date as new evidence comes available on the susceptibility or sensitivity of various systems, even the aquatic systems and their ability to recover, even with a 20-kilogram level?

Mr. Martin: My office, together with 60 other scientists, including provincial scientists, put together a set of documents last fall. In the aquatic section, there is a reference made to the 20-kilogram target we now have and to the fact that all aquatic systems are not protected by that target. The discussion suggests something of the order of 11 or 12 that we heard about from Minnesota, if you wish to protect the total aquatic systems. This is a tentative evaluation based on a limited amount of empirical information from the field and modelling information.

Mr. Manson: Can I add one thing to what Mr. Martin was mentioning?

When we talk about the very sensitive aquatic systems, one of the things I think we will have to do as we get our abatement program in place in Canada and hopefully get some action in the US, is to look at the extent to which, when this program is put in place, there are actually sensitive lakes that are receiving more than 11 or 12 kilograms of deposition.

The program is not going to have a uniform 20-kilogram deposition all across eastern Canada, as you get it in places like Muskoka. Things that are north of it are going to have substantially less deposition. There has to be some realism inserted into how many sensitive lakes there will be that are receiving more than, perhaps, 12 kilograms or something like that. We may have them all. We may not have to worry about whether it is 12, 13 or whatever. There may be some that are receding. We do not know right now.

Mr. Martin: We would not expect that those lakes which are most sensitive will, by chance, all sit in that part of the country where the deposition is highest.

Mr. Neufeld: I have a second question. Mr. Manson, you indicated that there were 175 kilotonnes that have yet to be allocated. Are there any indications as to which province or provinces have expressed interest in assuming that under their own programs?

Mr. Manson: I will not say that my door has been beaten down with offers or anything like that. No province has expressed any interest or desire to take any more of it.

The only thing I can advise you of--and I would be less than candid if I did not--is that the draft regulations Manitoba has issued will reduce emissions in that province to slightly more than 450,000 tonnes. Manitoba has said it is committed to 550,000 tonnes. It appears, by some simple arithmetic, that there are 100,000 tonnes of emissions that will not exist in Manitoba in 1994, courtesy of those regulations. I can only assume that we will be having some interesting conversations in Winnipeg about the extent to which we can incorporate that into the program.

Mrs. Grier: Can I ask a supplementary? We have heard from our own ministry that Ontario, out of the goodness of its heart, has picked up some extra unallocated reductions. Are there more over and above that?

Mr. Manson: Yes. In February 1985, when the ministers agreed to the initial allocation, we had 319,000 tonnes unallocated. We now are down to 175,000 tonnes unallocated. Since I mentioned the situation in Manitoba, I suppose I could also mention that under the regulations issued in Ontario, Inco has to get down to 265,000 tonnes by 1994 but, I understand, must also investigate the possibility of being at 175,000 tonnes by 1994. We may be having some interesting conversations right here about further allocations.

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Mrs. Grier: I want to explore a bit the chairman's questions about the Quebec situation. Is Noranda the worst contributor there?

Mr. Manson: No. Quebec's emissions in 1980 were 1,085,000 tonnes. Of that, Noranda was 552,000 tonnes, which is approximately 50 per cent of the emissions.

Mrs. Grier: Are there any other major polluters?

Mr. Manson: They have one other large source. It is a subsidiary of Noranda, the Gaspé copper smelter at Murdochville down on the Gaspé peninsula. In 1980, its emissions were 91,000 tonnes. Under Quebec regulation, it is required to be at 65,000 tonnes by 1994. However, all the technology is already in place at that plant to do it.

Mrs. Grier: It is how Quebec was able to have the technology and know enough to be able to say to Noranda, "This is the technology you would use," as opposed to Ontario's approach, which is to give a very long lead time for development of technology. How do those kinds of differences arise?

Mr. Manson: I feel as if I am speaking out of turn here, trying to speak on behalf of my colleagues in Quebec as to why they chose to specify the technology. They chose to tell Noranda exactly how they were going to do it. It is quite different, because most of the regulations that are issued leave the choice of technology open to the company.

Mrs. Grier: Maybe it is not fair to ask you, but what we have understood in the submissions we have had from Ontario Hydro and the ministry and the other people here has been that our regulation is very much a product of negotiation, with Hydro saying, "This is as far as we can go," and the ministry saying, "Okay, this is where we write the regulation." Does that same kind of thing occur in Quebec?

Mr. Manson: There was a rather lengthy period of negotiation between Quebec and Noranda, one to which federal officials, myself included, were not privy. They arrived at both the number and the technology in negotiation together.

Mrs. Grier: I wonder if you would explain a bit more about the last page of your submission, where you talk about the Trail smelter arbitration and principle 21 of the 1972 Stockholm declaration. We had some reference this morning to the Trail arbitration, but I am not familiar with principle 21.

Mr. Manson: The three things I noted at the end of the handout, the boundary waters treaty, the 1941 Trail smelter arbitration and principle 21, all say the same thing. All the obligations to which Canada and the US are signatory say to both countries, "While you can do whatever you want with your resources within your own boundaries and it is none of your neighbour's business what you do with whatever is within your own boundaries, you have a responsibility to ensure that anything you do within your own country does not damage the environment of another country." It is specified in different language in all those things, but that is the basic principle that exists in all those documents.

Mrs. Grier: But we have certainly learned through the Great Lakes water quality agreement that what is put on the paper and what is enforced and implemented are two very different things.

Mr. Manson: I have worked on some of these international things for a considerable period of time. That is one of the difficulties. These international obligations sound and look very nice, but when push comes to shove and you look at how you are going to implement them, people have different interpretations of what they mean.

Mrs. Grier: Are there any precedents where those kinds of general statements of intent have been used to force one country to do something it did not otherwise want to do?

Mr. Manson: The Trail smelter one was a case in point. That went through a rather lengthy set of negotiations and meetings, etc. God forbid we should be at it that long on acid rain. I think the Trail smelter case started in 1927, and it was not resolved until both Canada and the US agreed to a binding arbitration at, I think, the International Court of Justice in 1941. Prior to going, both countries agreed they would abide by the arbitration ruling.

Mrs. Grier: We cannot wait that long.

Mr. Manson: I hope we do not have to wait that long.

Mr. Chairman: I have no further questions from the committee. Therefore, I wish to thank you, Mr. Manson and Mr. Martin, for taking the time to come down and provide us with your information from a Canadian perspective.

Mr. Chairman: The committee will go in camera for a few minutes to discuss.

The committee continued in camera at 3:05 p.m.

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, APRIL 15, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
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Fish, S. A. (St. George PC)
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Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
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South, L. (Frontenac-Addington L)

Substitutions:

Haggerty, R. (Erie L) for Mr. Poirier
Smith, D. W. (Lambton L) for Mr. Henderson
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Ontario Medical Association:

Hilliard, Dr. N., Chairman, OMA Committee on Public Health
Mastromatteo, Dr. E., Member, OMA Committee on Public Health; Professor,
Occupational and Environmental Health, Faculty of Medicine, University of
Toronto; Consultant, Environmental and Occupational Health
Krauser, J., Associate Director, Health Services

From J. E. Hanna Associates Inc.:

Hanna, E., President

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Wednesday, April 15, 1987

The committee met at 10:09 a.m. in room 230.

ACID RAIN
(continued)

Mr. Chairman: Members of the committee, I want to welcome you back from what I presume was a good holiday. Everybody had a chance to get rested up and will be prepared for the last couple of days of our public hearings to ask good questions and assimilate a lot of information.

This morning, we have three members of the Ontario Medical Association with us to present a brief on the potential medical effects of acid rain. If you would like to come forward, we have Dr. Neva Hilliard, Dr. Ernie Mastromatteo and John Krauser. Welcome.

I believe there has been a handout passed around to the members of the committee. The deputants will be making a verbal presentation and then will entertain questions.

ONTARIO MEDICAL ASSOCIATION

Dr. Hilliard: On behalf of the committee on public health of the Ontario Medical Association, I would like to thank you for the opportunity to come here and to talk on an issue that has been very prevalent in our discussions and concerns over the years.

One of our members of the committee, Dr. Ernest Mastromatteo, who is an eminent leader in occupational and environmental medicine, will present on this subject.

Dr. Mastromatteo: The Ontario Medical Association is pleased to be here and to make this statement.

The OMA committee on public health is concerned with the impact of the environment on human health and has for some time been interested in identifying the evidence linking the precursors of acid rain with human health effects. While there is some evidence that water supplies can be acidified and can cause metals to leach into drinking water, another area of medical interest is the health effects of air pollution directly and the long-distance transport of emissions of sulphur and nitrogen oxides.

The OMA recently brought to the select committee's attention a press report describing testimony given to the US Senate environmental and public works subcommittee by physicians representing the American Academy of Pediatrics, the American Lung Association, the American Public Health Association and Mount Sinai Medical Center in New York.

In bringing this to your attention, the Ontario Medical Association hoped the select committee would consider the need to commission a balanced, scientific review of the evolving state of medical knowledge about the impact of low levels of air pollution on human health, especially in high-risk

populations such as children, the elderly and patients with a pre-existing disease.

We in the OMA believe that the current state of this knowledge should be assessed and applied as an early warning exercise to determine what, if any, discernible burden of ill health is caused by low levels of acidic air pollution from both domestic and transboundary sources in Ontario. The determination should also assess the contribution of other air pollutants on respiratory disease.

In addition, the OMA committee thought the select committee might be interested in the OMA recommendation that Ontario should consider improving its ability to detect the subtle adverse health effects from long-term low-level exposure to toxic substances in the environment.

Last year, the OMA committee on public health reported on its study of the current art of assessing these small-scale health effects in the community. At that time, we proposed two recommendations which have been discussed with the ministries of the Environment, Health and Labour.

These two recommendations were as follows:

1. That the Ontario government consolidate existing scientific resources, including those in the Ministry of the Environment, the Ministry of Health and the Ministry of Labour, and establish a team of experts to consult in the prevention, early detection and diagnosis of disease resulting from long-term low-level community exposure to toxic substances and to advance knowledge in these fields.
2. Given the thrust of the Health Protection and Promotion Act, the OMA recommends the above team should be accountable to the Ministry of Health.

Having advanced our thinking somewhat, the committee this year will be proposing to the OMA the concept of an environmental and occupational health research institute to implement these recommendations. We would be happy to discuss the thinking behind this new committee recommendation, although it is not yet official OMA policy.

Getting back to the medical testimony before the US Senate subcommittee, the OMA did contact Dr. Philip Landrigan, director of the division of environmental and occupational medicine at the Mount Sinai School of Medicine in New York City and talked to him about his presentation. We have also had time, although too briefly, to review the presentations from the American Public Health Association, the American Lung Association and the American Academy of Pediatrics. We also reviewed some of the background medical literature on which these submissions were based. Perhaps the following preliminary impressions will be of interest to members of the select committee.

US experts have clearly testified that exposure to air pollutants--primarily sulphur oxides, ozone and suspended particulates--even at relatively low concentrations, is capable of causing adverse health effects. These adverse health effects are more likely in susceptible individuals, but the experts stated that the general population was also at risk from these air pollutants.

In Ontario, as in many northern countries, it is estimated that about 20 per cent of the general population have pre-existing respiratory disease. This includes both asthma in adults and children and the incidence of chronic

bronchitis with emphysema, primarily in adults. There is concern about the health effects of air pollutants on this particularly susceptible group at current levels of air pollution and there is also the concern about the possibility of health effects on the general population as well.

In general, and in substance, the OMA believes there is a health risk from exposure to air pollutants. As stated above, it has been recommended that one way Ontario could improve its capability in assessing these long-term health effects of air pollutants on the health of the general population is through the mechanism of an institute, which I mentioned earlier.

Finally, the OMA also emphasizes that control measures must be maintained to achieve optimal air quality for all residents of Ontario.

That is the substance of the submission. I am sure the three of us will be delighted to take on any questions the members may wish to direct to us.

Mr. Chairman: Thank you very much. I am sure there are questions from the committee.

Mr. Haggerty: Frankly, Mr. Chairman, I was interested in Dr. Mastromatteo's comments. I know of his endeavours in this area of respiratory diseases, being involved with workers' compensation a few years ago and having had dealings with him at different hearings. I commend him on his brief this morning and his comments.

Have any particular studies been done in Ontario communities? I know there have been studies done by the Niagara district health council in this area of respiratory diseases, particularly in the Niagara district, and neuroplasms and other related diseases that may be caused by the ambient air in that region. Have there have been any other studies in communities across Ontario in this area?

Dr. Mastromatteo: Thank you for your comments. Yes, David Bates, one of the authors used by the US experts in testifying, carried out his study based on Ontario data. The Ontario data he used included emergency hospital admissions in 79 hospitals in southern Ontario in a broad band from Windsor to Peterborough. Then he compared emergency admissions for respiratory disease to air pollution levels monitored by the Ministry of the Environment. From that, he made some relevant comparisons, and these have been picked up by the US investigators in their submission to the US committee.

Mr. Haggerty: I have read some of that report and it omitted the Niagara region. That is the reason I raised the question.

Dr. Mastromatteo: Yes, I think he missed it. It went from Windsor to Peterborough in a broad belt.

Mr. Haggerty: This is right, and perhaps the Niagara region is one of the areas that has been most seriously affected by air pollution. I might say this is one of the reasons I am opposed to the Ontario Waste Management Corp. locating in the peninsula. Foul air may be emitted from that operation or any other spill in that area. Because of the high risk already in the Niagara region, I have often questioned the location of this waste treatment facility. Nobody has done any studies in this area in regard to that site for the OWMC and the possibilities that may follow.

Dr. Mastromatteo: I am not aware of any studies of air pollution

from the proposed location of the waste management facility, but certainly air pollution, along with ground water and other forms of pollution, should be considered in siting any waste management facility.

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Mr. Krauser: We have recommended to the Ontario Waste Management Corp. that it introduce a community health monitoring strategy around the facility. We have emphasized to it that being able to pick out subtle changes in community health is technically challenging, and being able to link those changes to the mixture of emissions from the facility as opposed to any other source is another technical challenge. We have recommended it set up a very specialized, expert committee to give it some recommendations on how to accomplish that kind of monitoring.

Mrs. Grier: I was interested in the recommendations you had discussed with the ministries of the Environment, Health and Labour. What response have you had to those recommendations?

Dr. Mastromatteo: I did not carry on those discussions myself, but perhaps the others might comment on that.

Mr. Krauser: I think there is a fair bit of interest. Unfortunately, two of the three assistant deputy ministers we talked to, Dr. Robinson and Darwin Kealey, have left. We have gone back to the Ministry of the Environment more recently and there is interest.

One of the major problems--and it was perhaps a mistake in formulating the recommendation, but it was a sincere recommendation--was our suggestion to put this all under the Ministry of Health. I think that is getting in the way of the merits of the first recommendation. The committee felt it was reasonable, but politically that is the difficult one to go with. But there is interest and I think we are going to be talking with the senior ADMs again about this.

Dr. Hilliard: Following that, a subsequent recommendation is coming forth this year to have an institute which may pre-empt that, if we are going to have our body in an objective--

Mr. Grier: If you cannot decide which of the three, you establish a new body.

Dr. Hilliard: It depends on developments.

Mrs. Grier: Was the thrust behind this recommendation the need for co-ordination between what was happening or is it the need to get something happening?

Dr. Hilliard: It was a little bit of both, actually. When we met with them initially, there was evidence that there were concerns in all ministries regarding this very major issue, but we felt there was a need for co-ordination and also a need for ongoing research; for example, the technology of how to develop such programs in community monitoring of low-level exposure.

Mrs. Grier: Am I correct in the impression I formed since my involvement with this over the last year, that we are really at a very early stage of any kind of research into direct health effects from environmental

contamination, or is it just that we have not pulled together what data do exist?

Dr. Hilliard: I think it may be a combination, but I think in our discussions from our committee level we pulled together at one point expert epidemiologists throughout the province affiliated with the various universities and had a roundtable brainstorming in this area. It became evident that the tools to do such monitoring are not yet in place. You need a lot of scientific input. There are also the complexities of doing community monitoring, because you have so many confounding variables--culture, migration, occupational exposure, lifestyle exposure, environmental exposure--it is a very complex issue and it needs a highly technical body to address this; again, because of the focus to develop a unit whose mandate is this solely, rather than to piece it over time on the various jurisdictions.

Mrs. Grier: What has happened in other countries? My sense is that in Britain, for example, they are much further advanced in this kind of extrapolation from data to actual health effects and drawing conclusions about environmental issues.

Dr. Mastromatteo: Could I just back up a moment? I think the idea of an institute should not be taken to mean that it will be new bodies and new funds to be found because there are existing resources scattered throughout the ministries doing research. One thought would be that they could be co-ordinated but dedicated to determination of health effects of environmental exposure.

The other thing is that--I am speaking personally now--in some ways, I feel it is better for the agency charged with determination of health effects to be separated from the regulatory agencies. It does not seem to make sense to me that the regulatory agency also has the research function to determine whether the health effects are caused by those environmental agents that they are set to control.

In terms of other countries, I am not sure that the United Kingdom is much further ahead than Canada, but in many other countries, there are models of independent institutes. In the United States, the National Institute for Occupational Safety and Health was set up as the research arm of the regulator, the Occupational Safety and Health Administration.

In many of the Scandinavian countries, there are institutes often linked with universities that are completely independent of the regulatory agency, but their fundamental job is to look into the question of human health effects from exposure to low levels of pollutants. We thought there was enough of that model in other countries, and at one time we thought there was the beginning of interest in such an institute right here in Ontario.

Mrs. Grier: Where does the funding come from for something like the study that Dr. Bates does on hospital admissions?

Dr. Mastromatteo: I do not know.

Dr. Hilliard: Probably through university affiliates and so forth. I am not clear on that.

Mrs. Grier: But that study keeps being mentioned. Is that because it is one of the few actual studies that has been done of Ontario? Is there any other work going on of which we have not been made aware?

Dr. Mastromatteo: It is one of the few studies that has been done; that is correct. Professor Neary of Ottawa also did a study comparing the residents of Sudbury with the residents of Ottawa; that is in the medical literature and could be reviewed by your subcommittee. But I am not aware of any major studies that have been done. There have certainly been studies done on the distribution and on the effects on lakes, wildlife and vegetation, but in my view there have not been sufficient definitive studies on humans who are breathing this material.

Dr. Hilliard: Just in answer to the question on the funding of David Bates's paper, I have the paper in front of me, and it was supported by grant MA-7235 from the Medical Research Council of Canada.

Mr. Krauser: There is work being done at the Department of National Health and Welfare that is not published, but there is a researcher, a toxicologist, who has done some work. I have talked to her and it sounds particularly relevant, but it was not available to us in time to bring it to your attention. In fact, as far as I know, the results have not been released officially by the Department of National Health and Welfare, so there is a little bit of further homework that could be done that we are not able to accomplish.

Mr. Partington: I am just wondering from your brief, is it fair to say it is likely that the air pollutants are contributing to the respiratory problems people have but that there are other general health concerns or health risks besides respiratory problems? Are you able to say that?

Dr. Hilliard: There is a possibility, certainly from the standpoint of air pollutants and precursors to acid rain. The concern is mainly respiratory, but one could question other elements and the carcinogenesis of those elements. But again there are no hard data on it.

Mr. Partington: One ailment I have become aware of over the years that seems to have increased dramatically from 20 or 30 years ago is allergies. What is in our lifestyle right now that has made that such an important ailment that was not here 30 or 40 years ago? Is that pollution of any kind?

Dr. Hilliard: That is an interesting point when you look at Toronto and hear patients say this is the allergy city of the north.

Mr. Partington: It is not any different in the Niagara Peninsula.

Dr. Hilliard: That is a good question. Whether it is the man-made pollutants or whether it is the other environmental factors such as pollens, grass and so forth, we get into the issue of body overload. You can take in so many foreign agents and then at a point it becomes an allergenic triggering point. I am not quite sure. Dr. Mastromatteo, can you address that any clearer?

Dr. Mastromatteo: I am not sure exactly of the thrust of the question.

Mr. Partington: We talked about the fact that in terms of air pollutants--I guess I have expanded it to pollutants generally--it seems clear from your brief that there may be a connection with respiratory diseases. Then you talk about other ill health. I was wondering if you can be specific and say what kind of ill health. My observation is that when I grew up if a child had an allergy, that was the exception; it was one child in a high school. Now

every child has to go to a doctor on a regular basis for shots; the kid who does not is abnormal. Is it a polluted environment that is causing that, or do we not know?

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Dr. Mastromatteo: Dr. Hilliard has mentioned some of the complexities of trying to sort that out, but there is no question in my mind that the susceptible individuals, those with asthma--and one of the members of our committee estimates that about seven per cent of children and 10 per cent of adults in this province have asthma; these are already susceptible individuals--will be affected by levels that do not bother the general population. They will sometimes be affected in ways they do not subjectively sense, just some constriction of their breathing passages. Others will have frank symptoms of breathing difficulties; that group is clearly at risk.

The other side of that are the chronic bronchitics who, probably largely related to their cigarette smoking habit, have developed chronic bronchitis over their lifetime which is aggravated by exposure to irritants in air pollution.

Then there is the contribution to cancer. Sir Richard Doll and Peto looked at pollutants as a cause of lung cancer. They were charged by the United States office of budget to look at the contribution of various agents to cancer in total. They thought that air pollution contributed one to two per cent. You might think that is a minor problem, but when you think of the total number of people dying of cancer, the one or two per cent becomes a fairly large number in this country. That is a burden of air pollution.

The other burden of air pollution on which we do not have a good handle is whether it is leaching any metals out of the environment which would not ordinarily have been leached unless the water became more acid. People are talking about lead. People are talking about aluminum. At the moment, I consider this leaching effect a bit hypothetical but certainly worthy of further research.

Mr. Partington: So one of the things, following your recommendation 1, is to provide the facilities so there can be a more focused approach to determine what air pollution or pollution generally is doing to the health of society.

Dr. Mastromatteo: I would strongly endorse that. I think we have to focus back on people again.

Mr. South: Did you say that one to two per cent of the cancer is due to air pollution?

Dr. Mastromatteo: I remember the document by Sir Richard Doll and Peto. I seem to recall it is one to two per cent. They were also charged to look at the contribution of occupations in general and they came up with the figure of four to five per cent for occupations. Cigarette smoking alone may be 30 per cent, diet may be 25 per cent and so on.

They were asked to attribute the causality of cancer to these various factors because people say that about 80 to 90 per cent of cancer is environmental. But a lot of people think environmental means chemicals from industry. In fact, environmental means smoking, diet, where you live, the air you breathe and where you work; it is the sum total of the environment.

Mr. D. W. Smith: This may sound a little more specific when I ask this question but I come from Lambton, around Sarnia, and we have fruit-growing areas there. Some of the fruit growers have found they have to spray their trees now when the rain is coming. They have to get a spray on there. I do not know whether it is to wet the fruit and the leaves, but if they do not, whether it be apples, peaches or whatever the crop might be, it will mark the fruit. I wonder if you have ever studied this as to whether it leaves a residue on the product or just makes the product look bad for sale. Have you ever done any studies on this?

I was not aware that this was as bad as it is, but the producers up there are now spraying ahead of the rain. I do not know how they know that acid rain is coming. Can the weather forecasters tell if acid rain is coming? Have you done any research along those lines to know whether this acid gets into the fruit itself or whether it just makes the product look bad?

Dr. Mastromatteo: I will have to give an off-the-top-of-my-head response to that, because I have not done any research. But I spent 25 years in the Ministry of Health when air pollution was a function of the Ministry of Health, and I was aware that there was a lot of air pollution damage to crops in central Ontario, from both ozone and sulphur oxides.

Ozone not only is an intense irritant to humans but also does blight crops, including tobacco, and there was need to take note of that. I am not aware of the use of sprays to prevent blight, and my feeling would be that the reason for adding such sprays is more for the appearance of the fruit or the crop and that there would not be any carryover to the crop itself in terms of harmful residues. Any acid precipitation or ozone effect on a crop would blight it and make it unpalatable to the purchaser, but in my opinion it would not add any toxicity to the person eating the crop.

You have Tom Hutchinson coming later, and he is a botanist. I think it would be good to direct that question to him.

Mr. D. W. Smith: Do you think the universities could do more research, as their role, than they are doing now? Do you see that they have a greater role to play than they have had in the past?

Dr. Mastromatteo: I guess it boils down to the money available to them. Universities certainly would like to play a greater role, and they would be perceived as independent and neutral academics, but from what I hear, they are being starved in terms of research funding. They are now having to scramble to survive.

I think they have a greater role to play. Maybe later on we can talk about mechanisms for funding research generally, because I think a research institute along the lines I envisage would have some role in co-ordinating the kind of research that goes on in Ontario, not only in co-ordinating the research but also in training the various professionals needed in this field.

Mr. Haggerty: There is one question I am concerned about and that is the area around a number of airports in Ontario in particular. Has there been any research done in this area, outside the acid rain, as to whether it may cause environmental problems in and around these airports? More and more homes are being constructed in those areas. Of course, as jets take off, there is probably a certain amount of fuel that is being spread out over that community. Sometimes I am concerned about the fuels, that they may be considered carcinogenic. Are you aware of any studies done in this particular area any place in the world?

Dr. Hilliard: The only studies I am aware of currently are studies done on noise and psychological and somatic effects from noise. Ernie, are you aware of the hydrocarbon effect?

Dr. Mastromatteo: No, I am not aware of it except in the local airports themselves. Sometimes when aircraft are parked, the products of combustion enter buildings and passengers and staff are sometimes exposed to the exhaust of kerosene fuel and carbon monoxide. There have been complaints by workers and the public, but I am not aware of any study of communities living around airports in terms of pollution from aircraft. Noise, yes; but not pollution from aircraft.

Mr. Haggerty: Noise, yes; that is a concern. Do you feel this may be an area where more research should be done when we talk about pollution?

Dr. Mastromatteo: I guess if I were to sit down as the head of an institute, I would look at the priorities I would see and I probably would put the health effects from acid emissions, sulphur emissions, as very high. I might put airport pollution a little lower in my priorities at present.

Mr. Haggerty: I believe you also mentioned that you thought the monitoring of the air quality around the communities should be separate from the Ministry of Environment. Am I correct in that?

Dr. Mastromatteo: No, not so much the monitoring of the actual air pollutants--

Mr. Haggerty: The research that follows that.

Dr. Mastromatteo: --but the monitoring of the health of the public from effects of air pollutants. I think something could be charged through such an independent body, but not the actual monitoring of the levels of SO₂ or the levels of total dust. That still remains the function of the regulator, to ensure that ambient air standards and emission standards are being met. What I would be more concerned about is the monitoring of the health effects on people.

Mr. Haggerty: Would you suggest then that perhaps universities, through research and development, would be places to keep it at arm's length from the Ministry of Environment, just to provide that check and the safe development of the system, so we are doing everything in this area to control air pollution?

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Dr. Mastromatteo: That is, of course, one approach. What we are about to recommend is that a separate institute be set up which would be charged with the long-term investigation of subtle effects of all environmental agents, including solid waste and air pollution. It would perhaps be nonuniversity, but it would be able to use university expertise.

Mr. Haggerty: I would think that is an area of research that the university would be the place for, because you are dealing close to the medical school, if you have areas there that could be opening the door for specialists to go into.

Dr. Mastromatteo: Right.

Mr. Chairman: You are suggesting that such an institute, which would be involved in environmental and occupational health studies, would perhaps come under the auspices of the Ministry of Health as opposed to either the Ministry of Labour or the Ministry of the Environment.

Dr. Hilliard: Basically, our initial recommendation two years ago was to consolidate the scientific resources currently available and to house them within the Ministry of Health. That was based on the thrust of the Health Protection and Promotion Act. With our investigations with the ministries involved and the more current concerns, we have evolved from that recommendation to a more current recommendation of an independent scientific institution and, indeed, are recommending it to be external to the ministries and regulatory bodies.

Mrs. Grier: May I pursue the concept of how the institute is seen. Would it be strictly a government institute, or are you looking at something that would be jointly run by government and universities or independent agencies? What sort of a structure do you see?

Dr. Mastromatteo: We have not talked about it too much in-house, so if I may be permitted to comment personally on that question, I think the institute would be a governmental institute and report through a minister to the Legislature. However, I think it should have an advisory body of people who would represent people affected by pollution. Maybe it would serve a co-ordinating role for all of the research done in the field, because I think priorities have to be established. It should have a co-ordinating role, and that way it would work with universities and health science centres. Then, too, it would probably have a co-ordinating role in the education of individuals. I see it primarily as a governmental institute.

Mrs. Grier: The primary function of this committee has been to look at the Countdown Acid Rain program. One of the difficulties I have had is understanding whether, when we say we are going to cut to 885,000 tonnes--I know that is probably better than 886,000 tonnes--there is anything that tells me if that is an adequate level, and in terms of human health, what the acceptable level should be. We have a standard based on the amount that should fall per hectare, but has anybody done any work towards developing how much SO₂ the human body can tolerate?

Dr. Mastromatteo: I think that work has been pretty well established by Sir Patrick Lauder in the UK with the Medical Research Council when they had the episodes of the London fog and smog deaths. He had individuals take their calendars and put down if they had a bad day breathing that day. He related that to SO₂ levels and total dust levels.

I think that back in history, we have a fairly good idea of what levels affect the health of people. I would say generally that if we met the ambient air quality standards of the Ontario Ministry of the Environment of 0.02 for one hour or 0.01 for 24 hours, we would serve to protect the health of the general public. That is why at the end of our submission we said that efforts should be made to maintain the optimal quality.

We know by reading the reports which were given to you that a large number of communities exceed the current standard in the United States for ozone. Ozone is an intense irritant to the respiratory tract. I think it is important in the United States to control these areas where the ozone levels are high because it will certainly provoke asthma in these individuals. I think we have the standards. I think we have to make sure those standards are met by the regulatory agency.

Mr. Chairman: Before I go to Mrs. Marland, I should indicate that we have had exhibit 45, which is from the American Academy of Pediatrics, passed around to everybody. It includes the presentation of Dr. Godar to the US Senate, just for reference purposes.

Mrs. Marland: You acknowledge that there are existing standards, and in fact, as you have just referred to yourself, your final recommendation is that the optimal air quality be maintained through control measures. I am wondering where would be the progress or advantage of setting up what you described as a governmental institute. Are we not extending the existing bureaucracy?

If we have those three ministries set up, as we do--Health, Labour and Environment--and within those existing bodies we do not have enough bureaucracy to do what the final statement in your presentation says, I would be more than happy to support the establishment of the institute, if I felt we were going to achieve something we cannot achieve with what exists. I would venture to add that I think that within our three ministries we do have the top staff in Canada in terms of knowledge. Possibly because of their commitment, they may well be the top staff in North America. I wonder what is to be served by establishing yet another body.

Dr. Mastromatteo: I spent 25 years in government myself in the past and am a little familiar with some of the bureaucracy. I would like to say that we feel there is a perception by the public that environmental agents are affecting health at levels which are not appreciated even by physicians. We feel there is a need to satisfy this public concern. I personally believe that it is better to separate that function of establishing health effects from the agency which is regulating and controlling the air pollution. It is a perception, but it is a perception that if you are also charged with saying that the air is okay and charged with regulating the quality of the air, it represents, in the minds of some members of the public anyway, a conflict.

What I am thinking is that an institute, which is independent of the need to regulate and say everything is okay and is meeting the standards, is separated from having to determine whether, in fact, the standards are even adequate. One of the charges of a research agency would be to determine whether the standards are protective enough. That is my major reason in making such a recommendation, the perception of independence from the agency which is also controlling. I gave as models what happens in other countries. I quite agree some of the experts who are doing the research in the existing ministries could well be the basis of an institute. Instead of working under a regulatory philosophy, they would work under a research institute philosophy.

Mr. Chairman: Mr. Krauser has some information he wants to add.

Mr. Krauser: What we are going to recommend is that this concept be approved by the OMA for public discussion. The committee is very attracted to the concept. Everything that Dr. Mastromatteo has said is attractive to the committee, and we are prepared to put this out.

One of the themes behind what we are talking about here that I have not heard specifically expressed is the importance of developing a critical mass of expertise and the ability to design methods that will demonstrate subtle health effects, that either there are subtle health effects or there are not and that those we can pick up are related to a particular point source. What we have found over the last couple of years in listening to the public debate about this, and the expert debate, is two things. One is that there are fairly

substantial limitations on how well we can answer those two specific questions in any pollution problem where you are not dealing with major acute effects, you are dealing with a mixture of toxic substances, long-term effects, maybe low-level exposures.

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The experts we have talked to emphasize how difficult that situation is. Our feeling initially was, if we could somehow or other pull together the three ministries involved in this area and other people who are also involved, like the Ontario Waste Management Corp. or the Gage Institute or the university, administratively, scientifically, in face-to-face work, we would start to develop and build and promote expertise in those two areas in Ontario. That is a very important thing to try to have happen, although it may not happen now with the kind of research universities get, their ad hoc nature, the short term and that kind of thing.

If we are going to foster that kind of development, then we are going to have to go at it quite directly. Our concept originally was to pull together the resources in the three ministries. Dr. Mastromatteo has added a couple of wrinkles we think are very important to consider, such as the independence, but as he said earlier, this does not mean a vast proliferation of bureaucracy.

That would kill the kind of critical mass of thinking that we would like to see developed in Ontario and that we think would benefit the government's ability to deal with the political issues of long-term, low-level exposure, such as St. Lawrence Cement burning garbage in Mississauga, that kind of being able to go in and assure the public about what is and is not a new health effect.

We think this is aimed at building that sort of capacity in government by an independent institute in Ontario and we think it would go a long way to reassure the public that the experts have a handle on the subtle health effects, which may be real, but you cannot pick them up by looking at deaths and hospital admissions necessarily. That supplements what you heard today.

Mrs. Marland: You are probably aware that you touch a button when you refer to St. Lawrence Cement and its energy from waste proposal, since that is not only in my riding but also right on my doorstep.

I hear very clearly what you are saying. You are dealing primarily with the subject of public perception as well as the need for data. We are all involved with public perception, but every time a government sets up another body, public perception also looks at the costs and the practicality of it: "What is this big bureaucracy at Queen's Park?" and in this case the three ministries. "What are they doing if you have to set up a separate institute?"

If we explain to the public that one is regulatory and this new one would be research, and therefore, perhaps, in the long term a greater protection to them, it depends how it is done whether it is successful in selling that idea. I wonder whether the Ontario Research Foundation is not an existing body that might well make a study of the areas we are concerned with, or it is just oriented towards short-term projects? Do you not see a possibility of it start looking into the subject?

Dr. Mastromatteo: My own personal assessment of the Ontario Research Foundation is that it is more project oriented. People go with specific proposals and fund or partially fund the foundation to carry out an

investigation. I think what Dr. Hilliard and Mr. Krauser said is that we need a kind of milieu, a grouping of scientists together, to be able to tackle these problems and develop the kinds of models that will look at these things.

I agree with you. I think politically it will need some selling to the public.

Dr. Hilliard: I have one last comment on this subject in regard to the public health committee recommendation to the OMA council that this be approved in principle for public debate and to participate in this type of a discussion to determine the pros and cons of government versus independent institution funding, where the institute should be housed, who it should be reporting to, how it should liaise and link into community resources and government resources and so forth. I think this is a very important concept, and once it gets approval of concept, there needs to be further debate regarding the intricacies and the procedural aspects of how it will be developed.

Mrs. Marland: I have one last question. In order to protect the credibility of a body such as the institute you are proposing, do you see that it might be possible to ask the contributors to the problem, namely, the polluters, to contribute financially to this body?

There are two ways of looking at it. If it is totally funded by government, the public may perceive it as another department or an extension of the government ministries we are talking about. If we ask the polluters to fund it, they may think that the institute is then going to be answerable to them and not be independent. But if you had a joint cost sharing that would allow it to be funded, but not totally, at the taxpayers' expense--because it is not the taxpayers' problem in terms of cause, although it is because we are beneficiaries of the products, whatever it is that the polluters produce--do you think that joint funding would add to the credibility of such an institute?

Dr. Mastromatteo: I certainly do. I would like to cite an example. By the way, this institute we talked about was in terms of occupational and environmental health. I was very impressed with a proposal they had in Sweden. I am only stating it. It works in Sweden, but I am not saying it would necessarily work here.

In order to offset some of the funding, they charge all employers, including government, one quarter of one per cent of payroll. This assures a continuity of funds coming in, and researchers do not have the problem of having the research funds turned on for four or five years and then turned off and turned on again. The funding varies with the wages and the cost of living because it is a fixed percentage of the employers' contributions to their workers' compensation. That idea certainly attracted me, because here was a fixed commitment. It was enough to fund quite a large research operation in Sweden.

I can see in the case of industries where the public perception is that they are polluting and causing health harm in a neighbourhood, the government should be able to go to that industry and say, "This pollution has to be researched, and I think you should contribute to the research because it is alleged that the pollution is from you." Some negotiation could be done, as is being done now, to clean up with certain industries. The industry and the government worked together on cleaning up dioxin from river bottoms, and I think that kind of approach has merit.

Mr. Haggerty: I have one final question to the panel. You mentioned hospital admissions. Are there any hard-core facts as to what the cost of this is to the health care system in Ontario? Are there any numbers you can come up with?

Dr. Mastromatteo: I cannot remember the number, but the United States did have a committee look at the total cost of environmentally related disease, and much of the cost, according to those authors, was hidden in things like medical care, social benefits, Canada pension plan. I am sorry, I cannot remember the figure, but I would say it is an enormous figure. It is probably as much as what is being spent on health care again in terms of environmentally induced health problems, according to this report on environmentally induced disease by the US government.

Mr. Haggerty: In other words, pay now or pay later.

Dr. Mastromatteo: Yes, I think so. We are paying for it now. We are paying for it in different agencies that have been set up, but we are not recognizing it as primarily environmentally induced.

Mr. Haggerty: The cause and the need to change it so that it reduces the risk.

Dr. Mastromatteo: Yes.

Mr. Chairman: I would like to thank the representatives from the Ontario Medical Association, Dr. Mastromatteo, Dr. Hilliard and Mr. Krauser, for appearing before us this morning. I am sure that the committee has found your input very helpful, and I hope we have been a little helpful to you in the discussions you will have with the main OMA committee.

1100

Members of the committee, Mr. Hanna is our next deputant, and he would like to come forward. Just before we hear from him, I would like to ask the committee's concurrence on requesting the House leaders to allow us to sit to discuss our report as soon as the House reconvenes.

To that end, I would like to suggest that our clerk write to the House leaders requesting that we meet the morning of April 30. That is the first Thursday after we return. Inasmuch as we might require a second day, we will also request Monday, May 4. Both those meetings would be in camera to discuss the report. I request the committee to give me its input on that.

Mrs. Grier: I have been asking our House leader whether private members' hour is going to be that first Thursday morning, and my information is that it is likely that it will be. If that is the case, I would not like to see this committee meet at that time.

Mr. Chairman: We could also meet Thursday after routine proceedings. I do not know to what extent our meeting on the Thursday morning would impact on the private members' hour. It would depend upon what members here are participating in it.

Mrs. Grier: I am participating with an environmental bill of rights, so that is why I am particularly concerned. I hope that all members of this committee will be concerned and will wish to participate in that debate.

Mr. Chairman: I did not realize you were first up when we come back.

Mr. Charlton: She was hoping to be last up.

Mr. Chairman: I am sure your request will receive a positive response from the members of the committee. With your concurrence, we will make that the Thursday afternoon after routine proceedings and Monday the same, if there is no problem with that.

Mrs. Grier: As I say, I have been unable to get a firm answer from the House leader as to whether the private members' hour will be that first Thursday or start the next one. If it is not that first one, then I would be more than happy to see the committee meet that morning.

Mr. Chairman: Maybe we can leave that up to them, but we will request the Thursday in any event.

Mrs. Marland: So now we are saying Thursday, April 30, after proceedings?

Mr. Chairman: Either/or, but certainly the Thursday.

Mrs. Marland: The 30th, in the afternoon.

Mr. Chairman: The reason I am saying the morning is because if they are not proceeding, it is more than likely that, with all the committees we have, we can get that time.

Mr. Partington: Are we also asking for the Monday after routine proceedings?

Mr. Chairman: Yes, just to have that booked in case we require the second day.

Mrs. Marland: Monday, May 4.

Mr. Chairman: Ms. Manikel will write a letter to the House leaders.

Welcome, Mr. Hanna. I believe that your brief has been distributed to the members of the committee, if you would like to proceed with your presentation.

J. E. HANNA ASSOCIATES INC.

Mr. Hanna: Thank you, Mr. Chairman, and I would like to thank members of the committee for giving me the opportunity to speak. It is a bit of a treat, quite honestly. I normally have to deal with the people who serve you in the civil service, and often a fair bit of filtering occurs between what I say to them and what is heard by you. It is indeed a treat for me to be able to speak directly to you. I hope I will be able to live up to your expectations of hearing from a supposed expert.

As far as my qualifications go, I felt that it was important, first of all, to give you some understanding of what my experience is in terms of the acid rain issue. I have been a consultant for 14 years in the field of environmental management. I have been involved with acid rain since 1979. The first involvement I had with acid rain was when I was doing some work for the Temagami Lakes Association. People should know where Lake Temagami is, but if

they do not, it is north of North Bay and is one of the jewels of Ontario in terms of recreational experience. The association asked us at that time, as part of an overall resource management plan we were doing, to look at the implications to the lake in terms of long-term acidification.

From that modest start, we progressed to dealing with various government agencies looking at acid rain. I have listed here just a few of the studies we have been involved in, but they will give you a sense of the types of studies we have done.

We have worked for the Department of Fisheries and Oceans on two types of studies. One is what I will call the technical side, the physical, chemical and biological interactions, the pure science side of it, looking at trying to develop for them models to estimate long-term acidification impacts. The other side we have worked on with the Department of Fisheries and Oceans was looking at the socioeconomic implications of those long-term changes.

So there are two sides to it, if you will. There is the scientific side, the hard numbers, and then the conversion of those numbers into what I call meaningful terms from a socioeconomic point of view. We can evolve from both those perspectives. Similarly, we have done work for the Ontario Ministry of the Environment, looking primarily at the socioeconomic aspects, but an integral part of that component is to develop what we call dose response models. Dose response models are essentially looking at the physical, chemical and biological interreactions to be able to predict what the socioeconomic consequences are. So while maybe the socioeconomic was the end result, we did look at the physical and chemical side also.

I have written a number of technical papers and attended conferences and done all the things that scientists and experts are supposed to do, so I feel my understanding of the acid rain issue is quite good from a technical point of view. I am also involved in other studies that have similar types of issues such as you are facing here with the acid rain problem in terms of encouraging industry to control discharges.

I am involved right now with the Ontario Waste Management Corp. We are working with them in looking at a long-term waste fates and quantities model. One of the big problems the OWMC has faced, if any of you are following that issue, is the amount of waste we can expect over time. One of the questions they have asked us is, "How can we anticipate the waste?" That is basically what we are doing, looking at industry and seeing how much waste it is likely to produce over time.

We are doing a similar type of study right now for the Ontario Ministry of the Environment under its municipal-industrial strategy for abatement program, looking at policies to develop effluent control procedures for toxic wastes, primarily in terms of liquid waste, not air emissions, but it has similar types of policy problems associated with that program.

In terms of the nature of my presentation here, I would like to thank Mr. Neufeld for spending a number of hours on the phone with me trying to get me up to date in terms of the nature of the proceedings here and what has gone on and the types of issues the committee is facing.

We discussed a number of things and we arrived at what I will call the terms of reference around which I prepared this presentation. He indicated there were four primary issues he thought would be useful for me to have a look at. They are: banking and forward averaging; I do not need to tell you

people what that is, I think you are now up to speed on what those issues are; economic incentives to induce controls of emissions, and I have listed there two specific things, emission rights trading and emission charges, and there are other issues associated with emissions economic incentives; the public review process to keep track of the countdown acid rain program; and finally, control of other sources.

My presentation is structured around these issues and I have broken it down according to each one of those major headings. I also would like to thank--there she is--Ms. Manikel for her help. She was quite useful in that she provided me with quite a bit of documentation. This is actually my first time to attend the select committee but I feel like I know a lot of what has gone on because she did send me the transcripts and whatever and I did find them quite useful in terms of getting an understanding of what is going on. She also sent me a number of presentations that other speakers provided. I have gone through those and I feel a bit like Newton in his statement about standing on the shoulders of those who have gone before. Really, most of the issues have been addressed already in the committee hearings that you people have had. I am not talking now about the health side; what I am restricting my comments to is more the emission control side of things.

Basically, my presentation will be looking at those issues that have been raised and trying to put them in perspective, at least the way I see it.

I would like to move on to the first issue on the agenda that I put out as the terms of reference: banking and forward averaging. I will not belabour the point; I think from reading the transcripts and the discussion that has gone on, the definition of banking and forward averaging is clear. I hope there is no misunderstanding this way. I think everyone is clear. If you want a discussion, I will do it, but I do not think it is necessary.

I would like to look at this issue from two points of view: first, its environmental implications and, second, its enforceability.

1110

Before I even start on this, I have to take one step back and talk about the acid rain issue from a scientific point of view.

We think of acid rain as acid rain, and we have this general sort of concept of acid rain and that is where we are all coming from. Acid rain really has two essential elements to it. I will just say this once and for all: I will not deal with health whatever in my comments here. Anything I say does not relate to health; it is primarily relating to biological effects.

Acid rain has two basic components and in my way of thinking I can really think of them as two separate types of impacts. One is what I will call long-term acidification, which is a long-term leaching of basic elements out of the system leading to a long-term acidification phenomenon. The other is what we call spring pulses, short-term emissions of acid compounds. That can occur on a very short time frame. The spring snow melt, freshet type of problem. The nature of the problems and the controls for the two problems are quite different in terms of long-term acidification and concern about loads; the total load to the environment is the issue.

In terms of spring pulses, it may be an annual load or a short-term load that is more important, so it is very different in how you go about it from a policy point of view in controlling the emissions. Given that banking and

forward averaging are quite consistent with a policy objective of controlling long-term loads, presuming that they are enforced and whatever, if you were able to take forward averaging and banking and use them as set out, the point is that your long-term load is going to be constant, so you can balance out and average out the variations over time. From that point of view, it does not raise a problem.

However, it does raise a problem in terms of spring pulses. What you are faced with is the possibility of having very substantial annual changes in terms of the total load to the environment on a local or in a distributional way. What that raises is the possibility of having very severe spring pulses periodically when you draw heavily from the bank and you draw heavily from your forward and whatever, so you may increase the potential for severe acid pulses. This, in my view, is an undesirable trend.

The second side is enforceability. We are presently grappling, with a great degree of difficulty, with the whole problem of enforceability and the municipal-industrial strategy for abatement program. It deals with a whole variety of issues associated with it and it has really opened my eyes to a lot of the practicalities of enforceability. When I look at banking and forward averaging, it really gives me a great deal of concern. I can just see endless court battles to try and decide whether you have overdrawn from the bank and whether the bank is consistent with the use of the bank and a whole variety of things such as that.

We are having a major problem right now just simply enforcing simple daily averages. We say "This is our limit," and you enforce that. When you start putting in five-year time horizons and a whole series of statistical types of superstructure on top of that, it just complicates it to no end. As I say, it is very hard for me to imagine it being enforced. Even if you could enforce it, it does raise a difficult problem. If you can bank or you can forward average, you have to wait at least five years before you can convict somebody on a violation because you do not know that they are going to exceed it until five years is over. You are faced with this very difficult dilemma in terms of actually implementing the program.

In summary, banking and averaging can significantly increase environmental damage. It greatly increases the complexity and timing of enforcement and compliance, and in my opinion I feel it should be deleted from the regulations.

The next issue I would like to deal with is economic incentives. I am responding here primarily to the presentation that Dr. Dewees made to the committee on March 10. I have looked both at the transcripts and at the presentation he handed out and I will be responding directly to that. I have made page references where I can to his presentation to assist you in that regard.

Dr. Dewees suggested several types of economic techniques. Specifically, the ones to which I will respond are emission rights, banking charges and emission charges. I have separated out each one in my discussion.

First, emission rights: The reason Ontario Hydro has asked for emission rights is to deal with the uncertainty of its future operations in terms of supply and demand for electricity. Dr. Dewees has proposed as an alternative the emission rights approach, which suggests it can go out in the marketplace and deal with its problems in terms of variation by negotiating with other sources.

This is an attractive proposition and, as I believe Carl Griffith of the Ontario Ministry of the Environment presented to the committee earlier in the sittings, there are major cost savings to be achieved through spreading the load unevenly among dischargers. I think the numbers he has suggested that you could go from are \$7.4 billion to \$2.3 billion by using alternative methods of reduction and control. Those numbers pertained to Ontario, but I think they were all over Ontario; all sources, not just the sources that are within the regulations.

There is a reason for consideration of economic efficiency in developing the limits and whatever. In my view, the emission rights in general do provide a potential means for achieving the flexibility, economic efficiency and target loads, but the system is not without limitations. I would just like to go over briefly what I see as the limitations.

First, the initial allocation. The approach could penalize the responsible industries, those that have done the most to control their emissions, particularly if their limit is derived based upon their current emissions. If I have gone way down the scale and you now say to me, "You have to go 50 per cent below that," that is a lot more onerous than if I had been delaying and dragging my feet all the way along and then I went down 50 per cent from that.

There is this problem of allocation of rights. I believe Mr. Scott discussed this briefly in some of his presentation in terms of how they arrived at the limits, but that certainly has not come to the light of the public in terms of how those emission rights were actually set out. I think that is a critical issue, particularly if you are now going to assign economic value to those rights.

As a suggestion to deal with that problem, I would suggest alternatively that each company or each discharger be given some base allocation, based upon its level of production and whatever. It is going to be difficult because you are going to be dealing with smelters in one case and with Hydro and whatever in another, but I think you could come up with some reasonable allocation for the various dischargers.

Once you have done that, then you would put the remaining rights out to the open market. You would say, "Okay, fine; now we are going to let everyone bid on whatever is remaining in terms of emission rights." That provides some basis for allocation among the various dischargers.

In my view, the regional load discrepancy is perhaps the major argument against emission rights tradings. The emission rights system was developed with the concept of what is known as a regional bubble. In other words, within that bubble, there is no difference in terms of who is discharging at what location. In other words, it is one big mixed bowl, if you will. It is a bathtub and within that bathtub who puts in the water does not really make any difference. It all mixes and everyone feels the water is cold or warm all the same.

If you have a regional bubble, it is quite a good concept, but in the case of Ontario, the discharges occur over such a wide geographical area that it is not consistent to use the concept of a regional bubble. In fact, what would happen is that there is the potential for major distributional effects in terms of who is discharging what. Again, I believe Mr. Scott in his testimony did make reference to consideration being given where, for example, Inco's discharges may land in Quebec and Wawa's may land in northern Ontario

or whatever. That has already been taken into account, and if you now open up the system, you can end up with a whole new array of discharges within the province and outside of the province. These are known in economic terms as external costs and would not be captured in an emission rights type of system.

1120

Finally, I discussed the emission rights issue with Mr. Scott. This was not for official records; this was simply an informal discussion to get his personal views on it. He raised an interesting point to me which I had not given consideration to, and that was the maximizing of allowable emissions.

In other words, if you have an emission rights type of system, there is a strong incentive for you to sell any rights you are not using. If your market system is operating well, you should be coming very close to that ceiling each time, on an annual basis, because it would be silly for me to sit there with \$100,000 worth of emission rights in my bank and not to exercise them with someone who could use them. So there is strong incentive there for industry to be as close to that ceiling as possible. With the current system, that is not necessarily the case.

In conclusion, I would like to make sure the committee does not put down emission rights, as a concept, as a bad thing in general in future Ontario policy. I think it is something that is worthy of further consideration, but as far as the Countdown Acid Rain program goes, I feel the constraints are too severe and I do not feel it is an appropriate strategy, given the nature of the acid rain problem.

Banking charges: I have already discussed my reason for not supporting banking, but if you have to go with banking, there is merit in Dr. Dewees's suggestion of providing an economic disincentive for drawing on the bank. In fact, I see the concept of a bank, if you are going to go that way, as not being a bad idea for all discharges.

What I mean by that is that, rather than going through the normal procedure we have now to enforce regulations, which is that you have to show there is a violation, you have to enter into prosecution, then you have to get a conviction and then a judge assigns a fine on top of that, you could have automatically in the regulations a stipulation that says this is the amount you pay when you are over, and you just pay that, like taxes and whatever. That is a very strong incentive, so the concept of banks in that sort of a term is not a bad idea, particularly if the charges are set such that those consequences are sufficient deterrents not to exceed the limits.

It provides industry with a very tenable environment in which it is regularly faced. It is faced with costs, it is always faced with trying to balance its costs against its profits, and everything is set out. It knows where it is going. I do industrial work too, and one of the problems with industry is that its people often come back and say, "We do not know what the government wants." A lot of my job is actually trying to go out and find out what the government wants and to negotiate that on the industry's behalf.

If you say to the industry, "Look, if you go over the limit, that is how much it is costing you and you can work that out in your formula." It does provide industry with a basis upon which to make its decisions, a much better basis than what it is making decisions on at present. It has its problem from an environmental point of view and whatever, but if you want to take it on pure economic terms, if the charges are high enough, we can take that money

and put it back into trying to mitigate at least some of the damages that might occur.

I believe the issue of Hydro was brought up in terms of its pricing position, but I think it is worthy of just a quick note, and that is--I am sorry, I cannot remember which member made the point--essentially, it is all our money; the public money type of concept. Hydro's money is our money and to what end does it account?

I think that is a very valid point and it is one that is not without requiring attention. By the same token, I think the response that was made to the committee--that is, where the money sits within the government--is very important. I would put to the committee that it would be a deterrent to Hydro, although I expect a lot of it would still be passed through.

Emission charges: I think I have already alluded to my concern with enforcement of environmental legislation in Ontario and environmental legislation--before, I think it was limited to North America; I will put it, throughout the world. It is a very difficult thing to enforce environmental regulations, and that is just the reality of it. It is not because of lack of political commitment; it is not because of inadequacies in our civil service or whatever. It is because of the nature of the problem.

It is a very difficult thing to define. That is basically what it comes down to. It is very hard to define a lot of these things in ways that are legally defensible. I suppose we could change our whole legal system and make it not that way, but given the legal system we are in, environmental legislation is very difficult to enforce.

Given that, I think that has to be an overriding consideration of this committee in terms of its deliberations. If I had to say only one thing to you--and fortunately, I do not, because I talk a lot--and that is all you had to consider, I would say, "consider enforcement." In my view, that is the overriding thing associated with this program.

The emission charges proposed by Dr. Dewees is another means of enforcement. I have already alluded to this and that is what I was referring to in terms of giving everybody a bank. It is a way of providing a more direct control in terms of enforcement. I think it is fair on both sides. It tells industry where you are coming from and it removes from the government the potential of looking as if it is not representing all interests fairly, that it is in bed with industry and whatever. Everyone knows the rules; there they are. You play by the rules. If you do not, those are the consequences. From that point of view, I think it is good.

The only thing I would add to the system is a sliding-scale type of approach. The environmental damages are not linear; they are not consistent. In other words, if I go over one unit and then I go over two units and three units, it is not one unit of environmental damage, two units of environmental damage, three units of environmental damage. It is probably one unit of environmental damage, four units of environmental damage, 10 units of environmental damage. What you want to do is to ensure that the charges you put for exceedences reflect those environmental damages. So you do not use a linear scale, but you use some sort of sliding scale to act as a further deterrent to exceeding the limit.

The last point I would make is, do not look at emission charges as a replacement for conventional enforcement activities. As I have indicated,

enforcement is the Achilles' heel of environment legislation. It has to be attacked on many fronts, and looking at emission charges is one way, but not the way, to regulate pollution.

Let me just deal with the public review process.

I tend to go on. What sort of time allotment do I have?

Mr. Chairman: This is very informative. However, I will indicate we have a time limit of somewhere around 12 o'clock. We have lots of time.

Mr. Hanna: It is 10:30, so we are doing well.

Mrs. Grier: That clock has not been advanced.

Mr. Chairman: We love to have informative presentations such as yours. We are willing to listen as long as you have information to provide.

Mr. Hanna: The public review process: I am referring specifically to the proposals put forward by the Canadian Coalition on Acid Rain. They basically laid out what I will call four public review mechanisms. I have abbreviated them. If you look on page 13 of their presentation, it is laid out in much more detail than I have here.

There are hearings required to amend regulations, hearings required for abatement plan approval, independent public monitoring of emissions and hearings required on nonenforcement. Again, I have attempted to structure my presentation according to these four points.

The concept behind the public review process is two-fold, or should be, in my view. First of all, it is to maintain the importance of acid rain in the public conscience so people do not forget about it. The other side, though, is from an enforcement point of view. It is that we provide further impetus for industry not to get pulled up on the carpet.

I mentioned to you the work we are doing for the Ontario Waste Management Corp. Some of the work that has been done there has demonstrated that the fines are really insignificant to industries relative to the public relations costs that are felt when they are brought up on environmental violations. If you maintain that type of public profile, it is a very strong disincentive for industry not to comply.

I would say one thing about public hearings; that is, they are costly. As this committee is probably only too aware, it takes time and money, and you have to use them carefully. We can end up like the Romans getting the bureaucracy. It kills us. We spend so much time talking about it and so little time doing it that we do not get anything done. You have to be very careful. I am not trying to suggest that we should not have public hearings, but we have to use them with discretion. I think that is a key issue.

1130

First of all, on the hearings required to amend regulations: Given the significance of and public attention attracted by these regulations, I feel that a formal review process is fully warranted. In fact, one of the problems I have is that regulations are often changed somewhat clandestinely. I do not think they are intended to be that way, but the only way to find out is if you have some technical watchdog that sends around all the notices about the

regulations that are being changed. It is often very difficult for the public to keep track of what is actually taking place in terms of regulation changes. Given the importance of this, it is quite worth while to have that type of provision incorporated.

I am not in favour of requiring hearings for the abatement plans approval process. I am not in favour of it because from my point of view the key public issue is that targets and deadlines be met. My understanding is that the reason the approval type of system is built into the regulation is to remove the argument that industry can come forth and say, "We were working on it but we just did not have time to do it and we need more time." It is the old delay tactic. Everyone has heard it. It is one of the banes of environmental legislation.

By having the approval process, you regularly monitor that. Instead of having to decide at the very last minute whether or not industry has been taking all appropriate actions, you have the opportunity to say: "No, you are just not doing enough. You had better get going because we want to see something very important in the next quarterly report." I think that is important but by the same token, as long as those reports are public, I see no reason for a hearing process. In fact, I could see a hearing process actually delaying it because of the whole structure that could be associated with that hearing system.

One of the major issues we are dealing with in the MISA study is independent monitoring. Associated with monitoring, I think the analogy has often been made of the cat protecting the canary. Indeed, it is a reasonable concern. By that I do not want to suggest that all industry is disreputable and that is a problem, but by the same token, no one wants to get a parking ticket. So you will not break the law, but by the same token, you are not going to go and make efforts to report yourself in violation. That is the issue underlying independent monitoring.

There are many ways to ensure accurate monitoring data. One of the ways, as suggested by the coalition, is to have a third party involved. My tendency in terms of monitoring would be to increase the sampling frequency and timing and analysis procedures such that you are assured an accurate and reliable information base upon which to make decisions.

Also, as is commonly used in the province at the present time, we have what is called audit monitoring, which is where the government periodically comes into a discharger and confirms that the numbers it is reporting are actually accurate. Independent monitoring is done in that way, but that is a periodic thing rather than a full-scale operational exercise.

Given the ability to define very clearly, in my view, a sampling strategy such that you get quite reliable data, I do not feel that independent monitoring per se is an essential element. I would recommend instead that you put in the regulations very specific requirements for what is required in terms of monitoring. You say, "Look, you have to take your samples this frequently," and, "This is how you take your samples." If you do not put them in the regulations themselves, you make some reference to another set of guidelines or a standard set of methods.

What is currently being used primarily in the United States is the ASTM, the American Society for Testing and Materials. ASTM standards are being set up for all sorts of things, not just concrete and the standard engineering type of things. It is now being set up, for example, for biological monitoring

and a whole variety of things that were not originally within its purview.

I can see using that type of a standards approach in the regulations, saying, "These are the standards you have to follow, these are the frequencies," and whatever. This is being used again in the municipal-industrial strategy for abatement, and the reason they are doing that is it now gives you another enforcement tool. What you can say now is if they do not follow the procedures, that is a violation in itself, regardless of the numbers. So it gives you another way to ensure that the numbers you get are accurate and reliable.

I would make mention of one other thing I noticed in the regulations which is a major concern to me, and that is the lack of clear definition of what is compliance. You may say: "It is very simple. You have a total number and that is compliance." The calculation of that total number is no simple thing. There has been a recent case whereby a major violation of the Environmental Protection Act was dismissed because of statistical grounds. The procedure whereby the emission load was calculated was argued on statistical grounds and they won. That is because of the definition of compliance.

The definition of compliance is a key thing. It is very hard to say simply, "You have a total load and you meet that load." The calculation of that load is a very complex and difficult thing and I would say that some attention to that is warranted.

The last thing I would like to deal with is the nonenforcement hearings, what I will call the independent watchdog, where the ministry does not follow through in enforcing violations. I am of mixed feelings on this particular suggestion, quite honestly. I can see its benefit in terms of providing greater public attention to government actions for nonenforcement. By the same token, it is another layer of--I will call it bureaucracy--that I am not sure is going to work very efficiently.

The way I have come to a decision on this is simply to say if the regulations and the limits are adhered to, what have you lost? You will never use it. If they are not adhered to, there is good reason that the public will want to find out why the violations are not being enforced. Given that demand by the public to have that sort of information, the process of having a public hearing type of process is quite worth while in my view. For that reason alone, I think I can support that particular recommendation.

The last thing I would like to deal with is the control of other sources. Quite honestly, this is the most difficult issue of any that was put on my plate by David Neufeld. The enforcement issue you were aware of, but the control of other sources is most difficult because of the large number involved, the relatively much greater cost associated with enforcement and the whole difficulty of--if enforcement is difficult, dealing with the current regulations of the four major dischargers that have been identified in the regulations at the present time, the enforcement of controlling all these others makes that wane into insignificance.

The scale and magnitude of trying to deal with this issue on a broad level is really something that is difficult to appreciate until you actually get out there and start having to deal with 30 industries in one day and trying to go through tons and tons of data and trying to determine whom you are going to prosecute when you have 15 people on your desk whom you could prosecute and whatever.

I do not know that I have any magic solution to this. The only thing I would say is I usually like to have a constructive comment when I make criticisms, but unfortunately, I do not think I have an overly constructive comment here. I feel that the boiler regulation, regulation 16/86, is very badly constructed. It is the kind of environmental regulation that just makes me feel very uncomfortable. What essentially it is doing is encouraging old technology and discouraging new technology. It is the exact opposite of what you want to do. What you want to do is reward those people who are willing to put in better technology, who are willing to upgrade and whatever. What the boiler field regulation does is encourage people to not put in modern technology, because once you do that, you immediately come under the regulation and therefore immediately come under scrutiny within the Ministry of the Environment. That to me is counterproductive.

I will not get into the details of that because it relates to a whole series of environmental problems that are associated with the--I should not say environmental; it is really administrative problems associated with environmental legislation, particularly the certificate-of-approval type of process we have in Ontario at the present time.

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Suffice it to say that this is an issue that is on the horizon. Fortunately, given that we have focused our attention on the four major polluters, where we are going to make major reductions, there is some time to deal with the other sources, but it certainly is going to be one of the most difficult ones to deal with in the future.

To summarize, there are six points that I would like to leave you with today:

First, banking and forward averaging should be deleted from the regulations, in my view.

Emission rights tradings are not appropriate to deal with acid emissions but have considerable value for other applications.

Emission charges could increase the rate of compliance with the regulations.

Public review of regulation modifications and nonenforcement of violations is warranted.

Details regarding monitoring and determination of compliance should be incorporated in the regulations.

The current boiler regulation is inadequate and should undergo major modifications.

Mrs. Grier: First, I would like to say I quite concur with the chairman. I think your presentation has been most helpful in focusing us on all the questions we ought to have asked you. I do not know whether it is the person who asked you the questions or whether it is your answers, but it has put it all together.

I have a couple of questions. I will not focus on your banking comment because I could not agree more. I certainly hope that the committee will be recommending that Hydro not have the banking provision.

When I heard you talking about the emission rights, by the time you got to the end I was one of those who was quite prepared to eliminate emission rights. Then you asked us not to. It strikes me that perhaps, from what you are saying you would feel that the whole concept of treating emission rights might be more applicable to the small sources than it is to dealing with the four major polluters. Would that be a correct conclusion?

Mr. Hanna: Yes, in a sense, with certain conditions associated with it. The emission rights system works where you have the bubble, where a bubble type of concept is appropriate. If we were to take what used to be called COLUC, the central Ontario lakeshore urban complex, as a bubble then I could see that type of system working. In other words, you would be able to define those types of systems within which you are operating.

The question I have--about which I am not clear in my own mind and I probably should be, but I have not given enough thought to it--perhaps, is about the small sources, how much they contribute to long-range transport and the acidification issue.

If you get into health effects, the sort of things you now are focusing your attention on, and I think it is quite appropriate, the bubble then becomes appropriate if it is the bathtub within which that is affecting--if it is consistent in that type of concept. In that type of concept, emission rights in my view have a great deal of promise. It is quite radical in terms of our approach to environmental regulation in the province, but I think it has a lot of potential. I do not, though, feel it has potential for dealing with the four major emitters that we have identified in the regulations simply because of the geographical nature of it. Clearly, there are transboundary considerations.

Mrs. Grier: In other words, if we eventually came to grips with the whole question of small sources it might be an appropriate technique to look at then, but within the context we are now looking at acid rain you do not feel it is appropriate?

Mr. Hanna: Usually, I think I have the good ideas but I have to say that is an idea that I did not think of. It is certainly worthy of consideration. I have not given it full consideration so I do not want to say for sure, but it is certainly one I would pursue.

Mrs. Grier: When you talk about your opposition to hearings on abatement plans approval, as I understood that suggestion from the coalition, the need for a hearing was to allow some public input into the methodology that the various major polluters were going to use. You seem to be opposing it on the grounds that it would lead to more delay. But if we have seen six monthly reports that are looking at a range of options, and then we finally come down to a conclusion that this is the option this particular company is going to follow, is there not a need for the public to have some comment on whether the option that has been chosen is the right one?

Mr. Hanna: Philosophically, I am not sure how I would come down on that. I guess the way I would look at it from the public's point of view is that the major issue is that you meet the deadline and you meet the target. To me, as a member of the public, that is my concern.

I have had it argued to me by many of my colleagues who say, "Yes, but there is a certain level of risk associated with them meeting that with different technology," which you really do not have any control over. They

might go with the technology that has a very high level of risk associated with it and you would not like that level of risk. There are those sorts of considerations. It is often very hard to specify all those so that you meet this level of control and this level of risk. It is very hard to put all those things in a nice, concise format, and that is an argument for having the public review these types of things.

My view is that if those reports are public, I guess it is a tradeoff whether you have a public hearing process or whether you have public input. I see those as two different things. I think there is need for public input. You want to make those reports public and you want to encourage people to respond to them, but do you want to have a hearing? That is the question I was addressing.

The problem I can also see is, having something like an environment assessment board, an environmental hearings board or appeal board, whatever the terminology is, what mandate are you giving it? What determination do they come with at the end of their hearing? There is not a regulatory structure within which they are operating. If you have an Environmental Assessment Act they are operating within, that sets out their mandate in terms of how they are operating. I am not sure what mandate you would give them to hear under that type of process.

Mrs. Grier: But are we not already into that kind of confusion under Countdown Acid Rain, given that Hydro says it is going to be seeking environmental assessment approval for scrubbers and various processes that it sees as a part of its program? Some board is going to have to determine. I am not clear in my own mind how on earth this is going to work if you go for an environmental assessment hearing on a kind of scrubber. The board that is giving you the approval on the scrubber is not necessarily the board that is going to be determining whether you are complying with Countdown Acid Rain.

Mr. Hanna: That is exactly what I am saying. The problem I have is trying to see that. I do not see how Hydro's environmental assessment scrubbers are going to work. I can see it working on transmission lines and that type of thing. I am not clear how that is going to work. To me, it is very cloudy. If it could be made clear to me, maybe I could be convinced to change my mind, but right now, it is a very fuzzy type of concept. I do not see how they would work.

Mrs. Grier: Hydro is a recent convert to the need for environmental assessments, so perhaps that can be worked out as time goes on. Quite frankly, I forget the thrust of Dr. Dewees's comments on the boiler regulation. You refer to it on page 9. Perhaps you can expand on that a bit for me.

Mr. Hanna: I do not like to plagiarize and the thoughts that Dr. Dewees--

Mrs. Grier: You concur with his comments.

Mr. Hanna: That is what I meant. That is why I put out that I concur with his comments, simply to make sure it was clear I was not coming in with some new thought because it was basically Dr. Dewees's thought I was building on. I essentially reiterated what he said; that is, that you are providing economic disincentives to introduce modern technology.

Mrs. Grier: But I do not understand or remember enough about the boiler regulation to know how it is doing that.

Mr. Hanna: Oh, I am sorry; I did not follow your question.

What the boiler regulation says is that if you are a current operator of a boiler, you may fall within the provisions of the regulations, but because you are a current operator, you are not brought within the regulations. If I can just take a step--

Mrs. Grier: Sorry; say that again.

Mr. Hanna: If I am operating a boiler right now, there are provisions within the regulations that say if I have a certain size of boiler, a certain type of fuel, a certain emission rate and on and on, I would come under the regulation. However, I only come under the regulation if I change my operation. If I am not changing my operation, I maintain my current status.

Mrs. Grier: You are grandfathered.

Mr. Hanna: Yes, it is grandfathered; exactly. The reason that is the case is that most of these systems have what are called certificates of approval. Perhaps I can digress here for a minute. One of my pet peeves at the present time is the certificate-of-approval process we have in the province. What it does is give you one-time approval. If you get your certificate of approval, it essentially is in place. The minister has the power to come back and revoke it and to change and modify your certificate of approval, but that is seen as a drastic action. To do that across the board by saying, "Revoke all certificates of approval for boilers," is a drastic action. It is not only drastic; it would also be almost impossible for the civil service to reissue all the certificates of approval that would be required.

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An alternative procedure that is used in the United States that we are looking at right now in some of the work we are doing for the Ministry of the Environment is a permit type of system. The difference between a permit system and a certificate-of-approval system such as we have at present in Ontario is that a permit is renewable on a five-year basis. That is set down. It has an expiry date of five years. At the end of five years, you review it and decide whether the regulations that are there at that time should be revised. What it does is provide the government with a means regularly to review and ensure that the operating conditions under which a system is being run are appropriate.

With a certificate-of-approval process we can do that, but as I say, it is a drastic type of action and it is not built into the system. We will probably be making recommendations in a report to the ministry suggesting that, certainly in terms of toxic liquid discharges, this type of system be brought in simply to deal with this problem.

Mrs. Grier: I have a final question. You do not make any mention of NO_x and the fact that Ontario Hydro can trade SO₂ for NO_x. Were you not asked to do so?

Mr. Hanna: No, not at all. I do not know whether David and I talked about NO_x or not. That certainly would not have constrained me. The reason I did not deal with NO_x is primarily the time. Quite honestly, I would like to sit here and talk to people for a day because there are a whole series of issues I would like to raise that are far beyond the scope of what I have raised. It is the time. I realize your time is critical, so I have tried to focus my comments. NO_x is a big issue.

Mrs. Grier: May I focus the question then? I suspect we could go on for a long time.

Mr. Hanna: That is right.

Mrs. Grier: Do you think Countdown Acid Rain deals adequately with the NO_x issue?

Mr. Hanna: Countdown Acid Rain does not deal with NO_x . I am talking about the regulations. It does not address the issue from a regulatory point of view. To my mind, the NO_x issue is what makes the acid rain issue perhaps the most difficult. I was told by some of my colleagues to be very careful about what I said here because I would come across like Ronald Reagan, but I am concerned about the concept of acid rain being a simple issue in terms of its destroying our resources and being a black and white issue.

I do not see it that way. In fact, the work I have done over the past eight years suggests that is not the case. There are benefits to acid rain in addition to damages. NO_x is one of those elements that has the potential for benefits. I said "potential." Like the whole acid rain issue, it is all potentials and uncertainties and nobody knows for sure, but NO_x does have the potential for beneficial effects, primarily because NO_x is functionally, from a plant's point of view, very similar to the nitrogen fertilizer you put on your lawns. It has a fertilizer effect.

The argument that I believe was brought by Mr. Perley when he made his presentation here was that there is a current theory that by providing the fertilizer, the plants do not harden off and that, in fact, you make them more susceptible to cold injury. It is a very complex problem.

NO_x is also closely related to the ozone issue and the ozone production is related to NO_x , so it is not a simple issue. I was not going to say this at my presentation, but now that I am into it, I will say it: In your deliberations on the whole acid rain issue, be very cautious, whatever course you take, that you do not get yourself boxed in. If there is a flexible choice, take it. I can give you an example. If you have the choice between scrubbers and low sulphur coal, take low sulphur coal because the scrubber may not be adequate enough in five years. We have just seen it here with the health effects. No one knew about health effects, or no one thought there was a health effects problem, until six months ago, or less than that. Now suddenly we have a whole new dimension brought into the problem. Now we have a whole new series of questions as to whether 20 is an appropriate target.

I can see us going ahead and spending these billions of dollars we hear being talked about in terms of controls and then having to go back to Ontario Hydro, Inco or whatever and say, "It ain't enough." We know it may not be enough now with our current information, but we may have to go back even further. I will say to you also that there is the possibility it may be unnecessary. That may be less of a possibility, but it is a possibility and you have to keep that clearly in mind in making decisions. I do not want to sound like Ronald Reagan on this. The thing I would leave you with--

Mrs. Grier: You just sound like Hydro on banking.

Mr. Hanna: I have destroyed my credibility then. The point and the key issue and the key place where I disagree with Ronald Reagan is that his interpretation of uncertainty is do nothing. I do not agree with that. My interpretation of uncertainty is that it is still a very strong argument for

doing something, but you should be sure that in what you do, if you have a choice, you take the most flexible choice available to you. That is what I would say to you.

Mrs. Grier: Thank you.

Mr. Chairman: If Mrs. Grier retracts her question, will you retract your comments?

Mr. Partington: Currently, under the Countdown Acid Rain program, with the banking provisions you would like to see deleted, and I agree with that, there is an appeal to cabinet for a decision. With respect to a change in regulations, you are suggesting that there be a public review process, a legislative committee. How do you see that? What is the process? Hydro has said, for example, that when it has to reach above limits, in some cases it is because of circumstances outside its control, an emergency. The question is time limit. Would the legislative committee hear public input, review it and then recommend to cabinet which would make the final decision?

Mr. Hanna: I am a little confused by your question, quite honestly.

Mr. Partington: In one of your recommendations you said, "Public hearings can be useful to ensure all significant considerations are examined." It is under "Public Review Process." You disagreed with three of the four suggestions of the Canadian Coalition on Acid Rain.

Mr. Hanna: Two.

Mr. Partington: Okay, but you are recommending, with respect to amending regulations, that a public process be initiated. I am wondering if you could--bearing in mind that with respect to Hydro, it says there are some emergency situations.

Mr. Hanna: There is a misunderstanding in terms of what I am saying and what Hydro is saying. I am talking about regulations. I am talking about going in and changing the regulation whereas with Hydro, in its emergency and the reason for banking, there is no change in the regulation. It has it in the regulation. The appeal to cabinet is, "Can we use the banking?"

Mr. Partington: I agree, but if you delete banking and the use of forward credits from the regulations and if, for example, some of the nuclear capacity is shut down so you have to revert to a facility that would take you above, then I assume you have to amend the regulations.

Mr. Hanna: No, not at all. The ministry right now has what is called discretionary powers of enforcement. It uses them all the time; people sometimes say too much. That was probably the intention behind the coalition's suggestion of having the watchdog type of system, whereby you would look where there was a violation that was not enforced. It would then come out to the public why an enforcement action was not taking place. If Hydro has an emission beyond its control, discretionary powers of enforcement would be implemented. The coalition was suggesting that if the environmental assessment advisory committee, or whatever the committee is for this public review process, deems that is appropriate, it is game over. Even if it deems it is not appropriate and it goes to a public hearing, Hydro may come forth and be able to make a reasonable argument that it is legitimate exceedence. Banking is not necessary.

Mr. Partington: That is right, but the public review process is not decision-making; it is in the nature of a recommendation to cabinet.

I have one other question. On the whole question of banking, when I think of Hydro's presentation and the comments here, it appears competent to meet the limits until roughly 1993 when the use of coal will increase. It seems to me, therefore, that the reason for banking in the first place really was not to cover emergency situations until 1992. Knowing that it may not be able to meet the limits from 1993 on, in effect, it has imposed a flexible limit much higher, almost back to today's rate or that of one or two years ago. It can exceed the limit, but still say it is within the limit. Is that how you see it?

Mr. Hanna: I suggest you talk to Hydro about that. Probably you will want to recall Hydro and ask that question directly.

Mr. Partington: You do not want to comment on that?

Mr. Hanna: I am afraid it is in a better position to comment than I am.

Mr. Haggerty: I was interested in your comments on page 8 on independent monitoring with regard to the proposed resolution by the coalition. Your second paragraph says, "Usually emission monitoring accuracy is controlled by specifying sampling frequency and timing and analysis procedures, and conducting periodic audit monitoring, usually by the ministry." Then you go on to say--this is what puzzles me to some degree; I have difficulty in following it--"I do not see adequate justification for independent monitoring."

We are talking about acid rain. I am concerned about the area of the municipal-industrial strategy for abatement--I believe you mentioned something about it--where under the policy of the Ministry of the Environment, each municipality will have to install monitoring in its abatement pollution control center. This is going to be a costly item for the municipality. It will have to done on a day-by-day basis to control the dumping of toxic waste into the municipal sewage system. What are your feelings on your comment that you do not see the justification for independent monitoring?

Mr. Hanna: I would like to answer that question dealing with MISA and--not to forget about the one here. It is a very interesting question, actually. We are producing a report and it deals directly with the issue you just raised in terms of municipal monitoring costs, frequency, how you deal with it and how you actually implement it, because it is a major consideration.

Mr. Haggerty: A costly one too.

Mr. Hanna: Potentially, it can be. It depends on how you do it.

Mr. Haggerty: When can we expect your report, that the committee may have access to it?

Mr. Hanna: I have probably got myself in hot water here, above my neck, because this is far down in the tiers before it will probably come to this committee.

Interjection.

Mr. Haggerty: I was sure you were going to ask that question.

Mr. Hanna: I am not very adept at political manoeuvring; I deal more with technical manoeuvring. That is probably why I do not speak to you people very often.

Mr. Chairman: Sometimes there are penalties for being candid.

Mr. Hanna: That is what I am trying to say in a roundabout way.

Mr. Haggerty: So the report is coming--what is the old saying around here?--in the fullness of time? I hope not.

Mr. Hanna: After it has been appropriately reviewed and considered.

Mrs. Marland: The saying around here was "in the late fall," was it not?

Interjection: Early spring.

Mr. Haggerty: I have no further questions.

Mr. Hanna: I am getting myself in deeper.

Mr. Chairman: It is probably an appropriate time to break since it is noon.

I would like to thank you very much for being here. Indeed, you have been extremely candid and the information you have provided us has provided a focus for those issues on which the committee is going to have to deliberate.

The committee recessed at 12:05 p.m.

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

WEDNESDAY, APRIL 15, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)

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Haggerty, R. (Erie L) for Mr. Poirier

Smith, D. W. (Lambton L) for Mr. Henderson

Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

Individual Presentations:

Wegman, R. A., Legal Counsel; with Wellford, Wegman and Hoff

Hutchinson, Dr. T., Institute for Environmental Studies, University of Toronto

Kinch, C., Graduate Student, University of Toronto

From the Ministry of the Environment:

Scott, G. W., Co-ordinator, Acid Precipitation Office

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Wednesday, April 15, 1987

The committee resumed at 2:12 p.m. in room 230.

ACID RAIN
(continued)

Mr. Chairman: Members of the committee, I think we are prepared to start this afternoon. We have Richard A. Wegman with us. Perhaps you will come forward, Richard. Richard has already provided us with a copy of his brief and I think it has been distributed to all members of the committee. Richard is with a law firm in the United States that has a particular insight into the US situation. We are pleased you are able to appear before us today. Perhaps you will proceed?

RICHARD A. WEGMAN

Mr. Wegman: Thank you very much. I am delighted to be with you this afternoon. As I understand it, you want me to try to cover briefly the state of acid rain legislation in the United States and give you some assessment of its prospects in the current Congress, which as you know, runs this year and next year; it is on a two-year cycle. Before talking about the current legislative prospects, I thought it might be useful to give you a very brief review of what has taken place in previous Congresses with respect to acid rain legislation in the US.

Our own Clean Air Act dates from about the same time as the Canadian Clean Air Act. Both statutes were originally adopted in 1970 or 1971. The US Clean Air Act was last amended in any kind of comprehensive way in 1977. At that time, Congress continued to focus primarily on the problem of ambient or local air quality. This was a reaffirmation of the approach utilized in the original 1970 act. At the time they were considering those amendments in 1977, the problem of long-range air pollution transport was just beginning to be understood. As a result, two or three provisions were included in the 1977 amendments, but that was not the principal focus of those amendments.

Of the three provisions added at that time, the first was section 115 of the Clean Air Act. Some of you may be familiar with section 115. It is the provision under which the suit by six northeastern states and a number of environmental organizations was brought a couple of years ago to try to compel the Environmental Protection Agency to take action on acid rain. The second provision was the one controlling the credit for emissions that would be granted to tall stacks. Third is the interstate air pollution provisions that are contained in section 126 of the Clean Air Act.

There have been efforts to use all three provisions since 1977 to try to deal with the acid rain problem and control it, but none has proved particularly successful.

In the early 1980s, the problem of acid rain began to be widely understood in the US and many members of Congress started to focus on the damage that acid rain is capable of inflicting across widespread areas in the US and Canada. Ambassador Gotlieb and other officials at the Canadian embassy,

and certainly officials from the government here in Ottawa, have been instrumental since early 1980 in bringing the problem of acid rain to the attention of decision-makers in the US.

Starting around 1980 or 1981, a number of legislative proposals were introduced in the US House of Representatives and Senate. By and large, these proposals followed pretty much the same pattern, calling for SO₂ emission reductions in the range of eight million tons to 14 millions tons per year. Many of the bills also proposed NO_x emission reductions in the range of two million tons to four million tons per year, usually divided between mobile source reductions and stationary source reductions.

It was not until the spring of 1984 that any significant legislative action occurred in the US when the Senate environment and public works committee, at that time chaired by Robert Stafford of Vermont, voted 15 to two to send an acid rain bill to the Senate floor. That bill would have called for an eight-million-ton reduction in sulphur dioxide emissions but it did not get any further than that. The 98th Congress adjourned at the end of 1984 without further action.

Last year, in the 99th Congress, there was action on the House of Representatives side. In May last year, the subcommittee on health and environment, the one chaired by Henry Waxman of California, succeeded in voting an acid rain control bill out of subcommittee and sent it to the parent energy and commerce committee. The parent energy and commerce committee, as you may know, is the one chaired by Congressman John Dingell of Michigan. The Waxman-Sikorski Bill, as it was known, called for a 10-million-ton reduction in SO₂ and a four-million-ton reduction in NO_x emissions.

One of the key provisions of that legislation was a fee to be imposed on all electricity generated in the United States and all imported electricity of one half mill per kilowatt-hour that would help to fund some of the control programs contemplated by the legislation.

But again, at the end of last year, the 99th Congress adjourned and there was no further action. As we enter the 100th Congress that began this past January, we start from a situation where each House has at least taken some action at the committee level, the Senate in 1984 and the House last year.

It is important to dwell just for a moment on the different types of approaches that the Senate and House are taking towards acid rain legislation. To some degree it is understandable, when you consider the particular makeup of the two committees that have control over acid rain legislation. The Senate environment and public works committee consists primarily of members or senators from two regions of the country: the northeast, such as Senator George Mitchell from Maine, Senator Robert Stafford from Vermont, Senator John Chafee from Rhode Island and Senator Moynihan from New York; and from the far west, senators such as Simpson of Wyoming and Domenici of New Mexico, and until last year, Gary Hart of Colorado.

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The result is that the committee has been very sympathetic to acid rain legislation because of the economic interests of the regions they represent. The northeast, because it is a receptor area for acid rain, is very much interested in seeing controls adopted. The far west is interested because, I think, the members there see acid rain legislation as possibly increasing the market for low-sulphur coal, and low-sulphur coal, as you know, is mined in

the far west. There are particularly heavy deposits in Wyoming and Montana where Senator Simpson and Senator Baucus hail from; they are both members of the committee.

That factor has tended to influence both the support of legislation in the Senate committee and also has explained why the Senate committee has, by and large, stuck with the so-called polluter pays principle. In other words, because there are no members to speak of from the midwest with any great influence on the committee, they do not feel that, at the committee level, they have to craft legislation that would directly assist the midwest in any way in controlling its emissions. Also, the legislation in the Senate, by and large, has allowed a choice of cleanup methods. In the Senate legislation they have avoided, for example, dictating the choice of a particular technology such as scrubbers to be used in controlling emissions.

Since the start of this year, four major bills have been introduced in the Senate to deal with acid rain. Of these, the most significant is the one put in by Senator George Mitchell. I say it is the most significant because Mitchell is the new chairman of the subcommittee on environmental pollution in the Senate and will probably have the most say in terms of what the legislation is going to look like.

Briefly, the Mitchell bill is quite a stringent one. It calls for a 12-million-ton reduction in sulphur dioxide emissions, up from 10 last year, and an additional four million tons in NO_x emissions. He would achieve those reductions by imposing average state-wide emission rates of 0.9 pounds per million BTUs for SO₂ and 0.6 pounds per million BTUs for NO_x in roughly 10 years, by 1996.

The bill would apply to all 50 states in the United States, and while not dictating any technology, there would be a push in the direction of technology, because if technology is used a utility would have 10 years to comply with the standards in the legislation. If technological control is not used, the utility would then have only five years to comply. Clearly, the additional five years is going to give utilities some incentive to use technology rather than, for example, fuel substitution.

There is also a provision in the Mitchell bill that I ought to quote to you, because potentially, down the road, it could be relevant to US-Canada bilateral relations. That is that the President is directed to undertake negotiations with both Canada and Mexico on bilateral transboundary air pollution agreements. Specifically with regard to Canada, the legislation says the President is to "seek to assure that...Canada shall adopt enforced reductions in sulphur dioxide emissions comparable to those undertaken in the United States, including the installation of appropriate technological systems of continuous emissions reduction."

That last mouthful probably means some sort of scrubbers, although the use of the word "appropriate" in that sentence may mean that the bilateral agreement the legislation seems to contemplate would not have to mean scrubbers. But I think that is probably a provision, if it stays in there, that the committee is going to have to think about and address pretty seriously.

I should mention that Senator Mitchell, just two weeks ago, proposed an amendment to his legislation that would provide the funding of \$2.5 billion for the clean coal technology program that was contemplated by the envoys' report, which I know you are all familiar with. The legislation now

encompasses the series of controls I have described and also would provide for funding for the clean coal technology program.

The second bill is the Stafford bill. I am not going to dwell on it. I have summarized it briefly in the written statement. It is somewhat more stringent than the Mitchell bill. It would call for perhaps as much as 13 million, possibly even 14 million, tons of sulphur dioxide reductions. The major difference between the Stafford and Mitchell bills is that the Stafford bill does not apply on a statewide average basis. When I mentioned the pounds-per-million-BTUs standard a few moments ago for the Mitchell bill, I was talking about average statewide emission rates.

The Stafford bill has very similar standards but they apply on a plant-by-plant basis. Every plant that would be subject to the legislation would have to meet those standards. This is obviously going to create a lot less flexibility, and as a result, the cost estimates for the Stafford bill are absolutely staggering. Last year, an independent consulting firm analysed last year's Stafford bill, which was a little bit more stringent even than this year's bill, and came up with costs totalling \$22.3 billion per year for an approach such as Senator Stafford's. Given those figures, it is probably predictable that the Senate will look for an approach that is a little different than the Stafford bill, while still seeking to achieve a magnitude of reductions that is probably in the same ball park as the Stafford bill, but probably with a little more flexibility.

Nevertheless, Stafford's approach has to be, and should be, taken very seriously and with good reason. Stafford is the former chairman of the Senate environment committee, is somebody who commands an enormous amount of respect and is a man of great integrity. In fact, there was a good deal of sadness in Washington last week. On Friday, Senator Stafford announced that after three or four terms in the Senate, he is not going to run for re-election next year. So we will not have Senator Stafford around by way of support in 1989.

The third of the bills is the Proxmire legislation. Proxmire's bill has as a chief cosponsor Senator Simpson of Wyoming. Simpson is the minority whip in the Senate, the number two Republican in the Senate, and his presence on the bill gives that piece of legislation a good deal of impact and clout. Proxmire's bill calls for a slightly lower level of emissions reductions than the other two bills, but his office estimates still that the level of emissions reductions that would be achieved would be in the order of perhaps nine million to 10 million tons of SO₂ emissions.

His bill differs from the other two in that it is a phased approach. In the first phase, which runs through 1993, states would have to achieve a statewide average of two pounds per million BTUs and then, in the second phase, running through 1997, would have to get down to the lower statewide average of 1.2 pounds per million BTUs.

The thinking behind the Proxmire approach is that the first stage of emissions reductions could be achieved quite economically, perhaps through techniques, such as coal washing, which are not terribly costly, and that the first five-year period would provide an opportunity for reflection and evaluation and possibly more research on technologies that might achieve the second-phase reductions without imposing some of the same costs and pollution control problems that scrubbers entail.

Finally, let me mention the bill to be introduced by Senator Durenberger of Minnesota. Durenberger is the only one who would seek to generate revenues. He would impose an emissions tax on power plants and industrial facilities to help to subsidize the cost of emissions control. There are other bills in the Senate, but those are the foremost important ones and when the Senate committee meets to consider legislation, I think it is a fair guess that the final bill that emerges from the committee will probably be something of an amalgam of those different approaches.

The Senate committee has been holding hearings this winter and spring. Earlier this year, Senator Mitchell had a day of hearings in which he focused on the health effects of air pollution and acid rain and received some pretty dramatic testimony on respiratory problems associated with air pollution and its transformation products.

In terms of the Senate's schedule, my understanding is it intends to hold further hearings later this month and then some time in May, if all goes according to plan, by late May it hopes to put together a committee print, which as I say will be an amalgam of these different bills, hold hearings in June on the amalgam draft and then, if all goes according to plan, try to move to legislative markup of the legislation by late June or July. That is their current intention. Frankly, I think it is a little optimistic and it would not surprise me a bit to see that schedule slip a bit to late July or, if not late July, they would probably have to do it when they come back after the August recess in early September. But they are on a fairly fast track and I think that is an encouraging development.

The House is a very different picture. First, I should mention that the makeup of the House committee is almost the mirror image of the makeup of the Senate committee. Whereas the Senate committee has virtually no midwesterners in senior positions, the House committee has midwesterners in critical positions. Congressman John Dingell from Detroit, as you probably know, is chairman of the House energy and commerce committee, a very powerful and very strong committee chairman. At the subcommittee level, the subcommittee on health and environment, which is the one which considers acid rain legislation, the ranking minority member is Congressman Edward Madigan of Illinois, another very strong member and a strong critic of acid rain legislation.

I should also mention that until last year, the ranking member at the full committee level was Congressman Broyhill of North Carolina, another strong opponent of acid rain legislation. Broyhill decided to run for the Senate last year and lost, so he is no longer a member of the Congress.

In any event, because of the midwestern membership, and there are midwestern members scattered throughout that committee, it is a 42- or 45-member committee, it has quite a few members from the Midwest in key positions: Tom Luken of Ohio, Phil Sharp of Indiana, Cardiss Collins from Illinois. There are quite a few midwestern members on that committee.

The result is that the proponents of acid rain legislation in that committee have tried to craft a bill that would appeal to midwestern members and that is one reason they came up with the concept of the fee, as I mentioned earlier, that could be imposed nationwide and then be used to fund emissions control. So it is a notion of spreading the cost. It is the other side of the polluter-pays principle. It is the principle that the Treasury or the taxpayer in general will assist in some way or share in some way the burden of controlling emissions.

As I mentioned, last year the subcommittee was able to report out a bill. However, there have been significant changes in subcommittee membership this year, and I have mentioned a few of them in the written statement. The result is that the membership is very evenly divided. The chairman of the subcommittee, Henry Waxman, estimates that out of 20 members on his subcommittee, there are exactly 10 who are supporters of acid rain legislation; in other words, 10 members who are committed to move a bill out of the committee.

They have to pick up at least one more vote for a majority. Obviously, they would like to pick up more than one to give them a comfortable working majority. This helps to explain why there has not been any House bill yet this year. Waxman, Gerry Sikorski and other proponents on the committee have been working to try to develop a new acid rain proposal that would stand some chance of picking up that 11th vote or maybe a little bit more.

I know that one of the options they are considering is dropping that fee I mentioned earlier, because the fee, although it was in the bill, did not buy them any particular support from midwesterners. There still was not any support for the bill from the midwesterners who oppose it and yet it clearly cost them support from other parts of the country, such as the far west. People in the far west feel they have already paid to clean up their own sources of emissions; now they are being asked to pay twice by having to pay for the fee and they resent it.

As a result, members like William Dannemeyer and Bob Whittaker from the far west have not supported the legislation in committee. The hope is that by taking that fee out of there, they might be able to broaden the base of support. It remains to be seen whether they will be able to do that but currently, that is what they are working on.

I think one other development that is a carryover from last year and could be helpful to the subcommittee this year is that there is a group of 30-odd Republicans in the House, led by Congressman Sherry Boehlert of New York, who have tried to have the Republican side in the House take a more moderate pro-environment position on acid rain. They were instrumental last year in rallying Republican support for the bill. They are working very hard at it this year, and I think that will be a very positive development as the House subcommittee tries to work on the legislation.

I think, though, there are possibly additional opportunities to get legislative action this year in the event that for some reason the critical 11th and 12th votes cannot be found on the subcommittee. Let me just mention two of them.

Under the United States Clean Air Act, air quality control regions are subject to an ozone attainment standard of 0.12 parts per million. Many cities have been out of compliance with that standard for quite some time. The current version of the Clean Air Act provides that this standard must be met by December 31, 1987. As of now, there are more than 70 cities that are out of compliance. If they are not in compliance on December 31 and the law is not changed, they will lose all of their highway funding under the law, and that would be a major blow to these cities.

The result is that almost certainly some kind of a legislative "fix"--I say that in quotes--would have to be found to deal with the problem. This will require some kind of a bill on clean air to be brought to the floor of the House, probably later this year or possibly early next year, to deal with that

December 31, 1987, deadline, possibly by extending it for a few years. The reason that is important from the point of view of acid rain legislation is that if acid rain legislation is still bottled up in the House committee at the time that other bill comes to the House floor, it will provide the acid rain supporters with a legislative vehicle that they can try to amend on the House floor. I think there is a fair chance that if they did that, a majority of members of the House of Representatives would vote in favour of acid rain control. I think every time there has been a poll on acid rain done in the United States, a majority of Americans have supported acid rain control.

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Second, the clean coal technology program itself may provide an alternative legislative vehicle as the appropriations for that program make their way through Congress. That goes through a different committee than does the Clean Air Act. It goes through appropriations, and Congressman Dingell is not on the appropriations committee. There are members on the appropriations committee, such as Silvio Conte of Massachusetts, who feel very strongly about acid rain legislation and are perhaps prepared to try to marry the acid rain legislation with the appropriations for the clean coal program. If he succeeds in that, that would also bring a bill providing for acid rain controls to the floor of the House of Representatives, so that would be a second route of getting the bill to the floor of the House, even if it remains bottled up in the Waxman committee, as I mentioned earlier.

Let me very quickly follow through the process. If legislation did clear the House in the form that I have described and then cleared the Senate in something like an amalgam of the three bills that I described earlier, the bills would have to go to conference. They would almost certainly be very different bills, because I think the Senate, as I indicated earlier, would probably adhere primarily to the concept of maximum flexibility and the polluter-pays principle, whereas the House would probably go the other way. It would be a very contentious, very difficult conference to try to marry the bills, but if they got that far, the likelihood would probably be that they would hammer something out, assuming enough time were left at the end of the session to do it.

Finally, if it got as far as that and a compromise bill did emerge that then passed in the House and the Senate again, as you know, the next step would be the White House for the President's signature. I am not going to try to speculate with you whether the President would sign such a bill. As you know, the administration has been hostile to acid rain controls up until now, but in a presidential election year, given the fact that environmental control is always a fairly popular issue, I would at least suggest to you that it might be politically difficult to veto a measure calling for acid rain controls, but, again, it is much too early to try to speculate on that.

I hope that is helpful and provides some general overview of the legislative situation in Washington. I would be delighted to answer any questions you might have.

Mr. Chairman: Thank you, Mr. Wegman. Just before I go to Mrs. Grier, I should mention to the committee members that Mr. Wegman may have to catch a flight later this afternoon. I would like to be able to finish our questioning at about 3:15, if that is fine.

Mrs. Grier: I have a couple of questions, so I will try to be quick.

The levels that are inserted in all these pieces of legislation: on what basis do they pull out the figure of nine million or 10 million tons? Is there a rationale for that?

Mr. Wegman: The earlier versions of the legislation actually specified a number of tons of emission reduction, something akin to the approach that you used to hear in Ontario and in the federal program. By keying the legislation in terms of a standard, rather than in terms of numbers of tons, it is based on modelling predictions. I think the estimates come from the Library of Congress, from the office of technology assessment, from outside consultants such as ICF Inc., and from the Environmental Protection Agency. As far as I know, I have never heard anybody question the accuracy of them, but that is basically where the numbers come from.

Mrs. Grier: I guess I was wondering what the objective was. Are they based on an attempt to have a total overall deposition on a certain area, as we have attempted here in Ontario, or is there any relationship to human health or the demonstrated effects of the emissions?

Mr. Wegman: I think it is based on the same scientific underpinnings that yours is. While we have not specifically adopted the standard of 20 kilograms per hectare per year, I think members of Congress have been generally trying to adhere to the recommendations that were in the National Academy of Sciences report calling for roughly a 50 per cent overall reduction level in order to protect sensitive areas. Since our own level of SO₂ emissions loadings currently is in the range of about 23 million or 24 million tons, something on the order of 10 million to 12 million tons is roughly in a close to 50 per cent range.

It is interesting that each year the legislative proposals have been a little higher. Three or four years ago they were talking about roughly eight million tons of SO₂ reductions. This year, the lowest of the three in the Senate is the Proxmire bill, and I think he is probably talking about nine million tons. Stafford's bill, as I indicated, is probably in the area of 13 million tons. As you go up, each additional million tons creates an exponential increase in costs.

Mrs. Grier: A lot of our discussion here has focused around the provision in our regulation that Ontario Hydro can bank emissions it does not use over a five-year period. In testimony before the committee, representatives from our Ministry of the Environment indicated: "Banking forms an overall strategy in the US related to emission trading and the use of emission reduction credits, as they are called. The strategy is aimed at reducing ambient air quality."

You have not mentioned banking. Can you clarify for us whether in fact the testimony we have had that it is very much part of the US system is correct, or is that a misinterpretation?

Mr. Wegman: I do not know that I would characterize it as an overall strategy. There has been a bubble policy in effect at the Environmental Protection Agency, since 1979 I think, which has authorized rather than required states to use bubbles, and some of the states have a program along those lines. I think banking per se is quite limited in the United States, but I am not prepared to go into a great deal of detail on the US banking program. Does that answer your question?

Mrs. Grier: One of the things we have been concerned about is that

the provision of banking in the regulation here may be seized upon by jurisdictions in the US as a kind of a loophole that they could then build into any new legislation they contemplated. The indication we got from the ministry officials was that this was not something with which we should be concerned. I wonder if in fact you feel that it would be a concern.

Mr. Wegman: There is no question that members of Congress are very much aware of what is happening up here, and the Canadian program is unquestionably part of the debate in the United States. I think proponents of controls were very pleased a year and a half ago when Ontario and Mr. Bradley were able to come down to Washington and announce with a considerable amount of pride that Ontario had the strongest program of acid rain control anywhere in North America, probably anywhere in the world. I think that is a real plus for moving acid rain legislation through the US, and I think it is important for the program to be seen as a strong program.

Opponents of acid rain controls will seize on anything they can, on occasion, to try to suggest the opposite, that the Canadian program is not as great as it seems, whether or not that is justified. For example, opponents of acid rain control have made a great deal out of the fact that New Brunswick and Nova Scotia have not signed a federal agreement, notwithstanding the fact that it is a really a minuscule portion of the overall level of reductions and notwithstanding the fact that it is something they probably were aware of, although one cannot be absolutely certain; they may not have been aware of it.

Opponents will also frequently point to electricity sales to the US and suggest that somehow acid rain legislation is linked to the desire to sell electricity to the US. Whatever you do, there is always the risk that opponents could point to some aspect of the program and say something along those lines. The fact remains that the Ontario program today is seen by any reasonably objective observer in the United States as a very strong one and one that sets an example for the US to follow.

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Mrs. Grier: One of the other elements of the US program that came up in our previous testimony was the contention by one of the witnesses that the US program was designed in such a way that the more people produce, the more they are allowed to emit. Is that a fair interpretation of it?

Mr. Wegman: We do not have the total loading concept in the US the way you have it here. The US program is expressed in terms of emission rates, pounds per million BTU. That is true. In that sense, it is different from the Canadian program, which imposes a ceiling.

As I mentioned--this goes back a little bit to the genesis of the US law--when the law was written in 1970 and amended in 1977, the focus was on ambient air quality and the rate at which emissions could be injected into a particular region without causing damage. The concept of total loadings and the impact that could have on the environment over long-range distances was simply not generally understood. We have not changed our law since 1977, so we are still following that general approach in the United States.

Mrs. Grier: But the new legislation you have outlined to us is a change in direction, is it not?

Mr. Wegman: Yes, that would be a change in direction. As I have indicated, those numbers were picked to try to impose a cap, a ceiling or a

gross level of reductions, to get down to somewhere in the vicinity of a 50 per cent reduction.

Mrs. Grier: Finally, I wonder whether you could comment a little bit on the whole question of retroactivity. As we have had the US program explained to us, there are fairly strict injunctions on new power plants that might be built. When one sees the total number of scrubbers installed in the US, it is quite significant, but it is on plants that have been built since some time in the 1970s.

Mr. Wegman: You are absolutely correct about that. That is called the new source performance standards program, and the standards are quite stringent on new plants. I believe the figure is that the standards are roughly seven times as stringent as they would be on older existing plants. The result is that--and I do not think this was widely perceived at the time the legislation was written--because the standards are so much more lax on the older existing plants, utilities have an incentive to let them go and to utilize them for a much longer time, which only exacerbates the problems. That is one reason why all these legislative proposals have been introduced.

Although the anticipated trend in US SO₂ emissions at the time the legislation was written in 1977 was that they would really start to come down as older plants were retired and newer plants came on line, that promise has not generally been fulfilled. We now see that the trend line in US SO₂ emissions did come down for a time, not as sharply as your own emissions, but it has started to level off. I believe there are predictions now that if no new legislation is adopted in the US, the trend line will start to turn back up later in this decade or in the 1990s.

Mr. Wiseman: I have really enjoyed what you had to say this afternoon and I think we have learned quite a bit. You said there are four major bills before the Senate. I took it, and maybe I was wrong, that Senator Mitchell's bill, because of his clout on that and being chairman, may be the one with the greatest chance, or that with a few amendments.

President Reagan was over here about 10 days ago. Would it help us to know what the makeup is, how many Republicans and how many Democrats, and whether the President has much control over the senators who are on the committee and are Republicans? Is it made up of half and half?

Mr. Wegman: It is a little more than half and half. I did not bring the list with me. I do not recall exactly what it is, but the Senate environment committee probably has 15, 17 or 18 members, something like that, of whom perhaps 10 are Democrats and seven are Republicans. It is something in that order. I could easily supply that to you when I get back to Washington.

The Republicans on that committee, starting with Senator Robert Stafford, who is the ranking Republican, and going down through Senator John Chafee of Rhode Island, Senator Simpson of Wyoming and Senator Domenici of New Mexico, have been relatively independent of the President. That does not mean they have been looking for every opportunity to run to the floor of the Senate and criticize the President, but they have been consistently--and this is a pattern that goes back to the early 1980s--willing to buck the White House on this issue and vote to support strong acid rain legislation.

There is no indication that that is going to change. In fact, if anything, now that Senator Stafford has announced his retirement, I think he would like nothing better than to see an acid rain bill this year as the

capstone in his career. They have been on this issue, unlike a lot of other issues, quite independent of the White House, and I think that is going to continue. In fact, I do not think that the White House, although it is always dangerous to hazard a guess, is going to be an extremely significant factor in the legislation as it develops. They have made their views known.

We may find out more about that when Lee Thomas, the administrator of the Environmental Protection Agency, testifies before the Senate environment committee on April 22. He is slated to testify a week from today. I think we could get a clue. It will be the first public statement by any major administration official in the aftermath of the summit, post summit and post President Reagan's visit to Ottawa and the statement he made before the Canadian Parliament.

Mr. Wiseman: We had a look at Senator Hart in his run for President almost three years ago. He is now the front runner, I guess, for the Democrats. Given that he comes from a state that I think I heard you say would be in favour of some sort of acid rain legislation and given that you said that a lot of people in the United States, when they are polled, had been in favour of some sort of controls, do you know whether Senator Hart used that in his last campaign? Is he apt to try to sway some of the Democrats, seeing they have the most members on that committee, to support a bill that might help him--I know you are guessing--in his run for the presidency?

Mr. Wegman: In terms of the second part of your question, I am sure he would be willing to do that but I do not think it is necessary. The members of the environment committee, both Democrats and Republicans, are very strongly in favour of acid rain legislation. They could move tomorrow without any difficulty to vote a bill, and quite a strong bill, out of the Senate committee. The problem is not in the committee in the Senate.

The problem is on the Senate floor because of the fact that the single, most powerful senator in the Senate, Robert Byrd, the majority leader, is from the state of West Virginia, which has very substantial coal deposits, much of them high-sulphur coal. He has been quite critical of acid rain control measures. The problem is not at the committee level, but once the bill gets to the floor, it will be trying to craft an approach that Senator Byrd might be comfortable in signing on to. I cannot predict whether that is going to be possible, but I know there are a lot of senators thinking about that problem.

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In terms of the first half of your question, I fully expect that Senator Hart will make this a major element of his campaign. In 1984, I know he went up to New Hampshire, in the New Hampshire primary, and was very proud of his record as a strong supporter of acid rain legislation. I think it unquestionably helped him. Did he not win the New Hampshire primary? I think he did.

Mr. Wiseman: Yes, that was the first one, was it not? Usually a trend-setting one, but it did not work last time.

Mr. Wegman: Yes, I think he won the New Hampshire primary. I do not know whether I have seen any polls actually suggesting it, but it could not have hurt him in New Hampshire.

Mr. Wiseman: I was just wondering because we heard here from people from the Muskoka area that, no matter what we do in Ontario, it will not help

them until you clean up yours south of the border. That is where they are getting most of their fallout from.

Could you give me an idea about the bills that come up? You mentioned that Senator Stafford had presented bills, I guess year after year. Is it something like our legislation in that the bills could be dealt with or not dealt with and die on the order paper and be introduced in a different form another year?

Mr. Wegman: Congress is in session for two years: 1983-84, 1985-86, 1987-88. When Congress adjourns at the end of the two-year period, everything dies. For example, last year, as I mentioned, the House subcommittee voted out an acid rain bill. The reason that does not count, as it were, is that if you are in a new Congress and you have to start all over again, you have to get the votes all over again to get it out of subcommittee.

At the end of the two years it all dies, but during that whole two-year period, legislation is reshaped constantly. As I mentioned, those three or four Senate bills are really just proposals right now, but they will be reshaped into a single bill the committee can vote upon.

Mr. Wiseman: My reason for asking that is that over the last four years, they have been proposing these bills. Have they seen a constant improvement in the number of people, the 17 who you mentioned are in favour of some sort of acid rain legislation, or does it stay pretty constant?

Mr. Wegman: No, there has definitely been a constant improvement. There has been a steady gain. The earliest I can remember working on it was in 1981. At the time, I think, most members were not even aware of the dimensions of the acid rain problem. Today, there is overwhelming support in the Senate committee, and the support has been growing in the House committee. Four or six years ago, there was not even a chance of getting it out of the House committee. Last year, they got it out and this year, it is going to be very close.

There is this group of 39 Republicans who have just written urging action on acid rain legislation. That is a major new development in the House, which took place within the last week or two, so there is no question the support does continue to grow.

Mr. Wiseman: I know others probably want to get on. There is just one area I wanted to know for myself. You mentioned the health committee versus the acid rain committee. If I heard you right, is the health committee made up of members mostly from the industrialized states, in contrast to the acid rain committee? You mentioned a lot of them were from the northeast and the west.

Mr. Wegman: I was contrasting the Senate committee and the House committee. Yes, that is right. The House committee is heavily populated with members from the industrialized middle west. The Senate committee happens to have a predominance of members from the east or the far west.

Mr. Wiseman: If they wanted it, then it still has to pass the other group?

Mr. Wegman: Yes.

Mr. Wiseman: Would the other group be the one that would more likely oppose it?

Mr. Wegman: That is correct. The legislation has to be acted on. We have a bicameral legislature, and it has to be acted on by both the House and the Senate. Action on it by one is not sufficient; both have to pass it.

Mr. D. W. Smith: I guess I can add too that it was an interesting presentation.

On the bottom of page 4, you said that "the President is directed to undertake negotiations with Canada and Mexico." Has it not happened already that the United States has an agreement with Mexico, or have I read about something else?

Mr. Wegman: Yes, there was an agreement struck on the Nokazari smelter in Mexico. That was in January, I believe. This particular piece of legislation was introduced in early January. They are focusing primarily on Canada in that provision. It may be that some further work has to be done on the US-Mexican agreement, but an understanding was struck, I believe it was in either December or January, with respect to the Nokazari smelter and the Phelps Dodge smelters in Arizona.

Mr. D. W. Smith: Is that agreement more stringent or less stringent than what they are going to ask Canada?

Mr. Wegman: It is quite a bit different. That particular agreement pinpointed one particular pollution problem. I have not looked at the details of the provision, but I do not think it goes beyond anything like the scope of an agreement that is being talked about between the United States and Canada, which would govern all major sources of SO₂ and perhaps NO_x emissions in the US and in Canada. We tried to deal with a particular problem.

Mr. D. W. Smith: Why would the US pick out this particular plant? Is it close to some vulnerable area?

Mr. Wegman: Yes. The Nokazari smelter is not too many miles south of the US-Mexican border, just south of Arizona, I believe--Arizona or New Mexico. Given the prevailing wind direction, there was concern that the emissions would carry across the border and make it difficult for some relatively pristine areas down there, areas that are now meeting or exceeding the ambient air quality standards of the Clean Air Act, to satisfy those standards. That is why discussions were opened with Mexico and the agreement was struck.

Mr. D. W. Smith: That is possibly why Canada or parts of Canada are trying to get the US to clean up some of its plants down there, because the prevailing winds really come up over Canada. I was just trying to find out a little of the background on the Mexican deal and why it was dealt with first.

Mr. Wegman: I think there are many members of Congress who suggest, as perhaps you are suggesting, that if an agreement could be struck on the Nokazari smelter, the same principle could apply to a US-Canadian agreement. I think that argument has certainly been made.

Mr. G. I. Miller: You mentioned the scrubbers that have been applied in the US. Well over a hundred, I believe, have been applied.

Mr. Wegman: That is correct. Over a hundred.

Mr. G. I. Miller: In Canada, we do not have any scrubbers at all.

There is some indication that scrubbers were going to be applied to some of our major users like Ontario Hydro, which is also a market for mid-state coal that is shipped across the Great Lakes. Would that be useful in negotiating and maybe encouraging an agreement, to indicate that was taking place and the markets for coal, particularly in Canada, are going to be reasonably stable? In your opinion, would that be useful?

Mr. Wegman: There is no question that opponents of acid rain control have pointed to the fact that Canadian facilities have no scrubbers and have tried to suggest that as a result, the Canadian program is not achieving all that we might say it is. I have heard many members in that category say we have 110 or 115 scrubbers and there are none north of the border.

Having said that, I am in no position to come up and tell you that this is something you ought to do. If that were changed, those who oppose acid rain control might point to something else such as, as I mentioned earlier, the Nova Scotia and New Brunswick matter, or the sale of electricity to the US. There are other things that might be mentioned. I am not going to suggest to you it would make things substantially easier if you were to put a scrubber on, although there are members in Congress who will argue that is the case and that it would make things easier.

Mr. G. I. Miller: Have the scrubbers been successful in utilizing--

Mr. Wegman: Yes, they certainly do reduce, very substantially, emissions in the United States, but they carry their own problems. They are extremely costly to install, as I understand it, and also I am under the impression they carry their own pollution disposal problems. That is one reason why there is such a push in the US for other technological systems to control emissions, the clean coal technology program. The hope is that something like limestone injection, multiburner or fluidized bed combustion or some of the other very sophisticated techniques might come on line over the next 10 years and make scrubbers unnecessary. That is why I am certainly in no position to suggest to you that you should put on scrubbers for political purposes, although there are people in the US who feel that way.

Mr. Chairman: Thank you, Mr. Wegman. I think we have kept pretty close to the time frame we indicated at the beginning.

Mr. Wegman: I would be glad to stay another five minutes or so. I do not mean to cut anybody off.

Mr. Chairman: I think those are all the questions we have. Thank you again for attending.

Members of the committee, Dr. Tom Hutchinson is our next deputant. I do not think he is here right now. We are going to have to recess for a few minutes. He is not scheduled until 3:30 p.m.

I would like to take a couple of minutes to indicate to the committee about tomorrow. Unfortunately, for my part I cannot be here. Mr. Miller will be in the chair. As you know, we have scheduled the last hour or whatever time we can set aside for an in camera discussion. I want to indicate to the committee that it is my opinion this period of time should be used solely for giving some direction to David Neufeld for a draft report that he would bring to us when the House reconvenes.

It is up to the committee, but I do not sense there is a necessity for

any prolonged debate, votes and that sort of thing; perhaps just some indication of consensus items and then leave other items until the time when we are back when the House reconvenes.

David has provided the committee with some background information that I ask you to bring tomorrow to aid in the discussion we might have.

The committee will stand adjourned until 3:30 p.m.

The committee recessed at 3:14 p.m.

1530

Mr. Chairman: The committee will reconvene. We have Dr. Tom Hutchinson and one of his associates whom he will introduce. They are with us today to make a presentation on the effects of acid rain with respect to all foliage dieback. Welcome, Dr. Hutchinson. I do not know whether you have a verbal presentation you want to make prior to getting into your slide presentation, but I will leave it to you.

DR. TOM HUTCHINSON AND CRAIG KINCH

Dr. Hutchinson: I have a few slides and two overheads.

I should introduce my assistant, Craig Kinch, who is one of my graduate students who is working on sugar maple problems and a lot of whose data I will be using when I talk to you today.

Actually, the reason I felt it might be a good idea if I came to talk to you was that I think we have some new wrinkles on the sugar maple problem. We probably have some new information that I felt you might be interested in hearing about.

The sugar-maple-decline problem in North America is something that has occurred from time to time, so we are not necessarily dealing with an entirely new phenomenon. What has happened since about 1981 is that there has been a very substantial death and dieback of sugar bush in Quebec. This really has gone at such a speed and intensity that people in Quebec are quite frightened that they may be facing the demise of the sugar bush industry.

By the time they did their surveys this year, they estimated that about 60 per cent of their sugar bush now is affected, with a high percentage of trees in that sugar bush actually dying or dead. This is something that has come on like an express train.

One of the things we have to ask in Ontario is, do we have the same sort of problem? Do we have a probability of getting it? What is going on with sugar bush in Ontario? The answer seems to be somewhat disturbing. Quite a number of growers have been complaining of dieback and decline in that sugar bush over approximately the past four years. Somewhat subsequent to the Quebec situation, they have been reporting dieback of sugar bush.

We went to Quebec in 1985, having heard all the publicity and having read about it. From a rather cynical point of view, we did not really believe things could be nearly as bad as they had suggested they were, so the result was that we were astonished that the situation looked desperate.

It has been suggested that the sugar bush is dying because of bad

management, that it is dying because of overintensive extraction and that the new vacuum systems the growers are using are overstressing the trees. It has been suggested that it relates to the consequence of infestations of tent caterpillar. There is a whole series of suggestions made as to why this is occurring for sugar bush.

So one of the things we did, and the Quebec people have done in a larger way, was we went and looked at sugar bush tapped in the old-fashioned way, sugar bush with the intensive vacuum systems and sugar bush that has never been tapped and is not being used for maple syrup.

I think it is true to say that the most intensively tapped sites we looked at probably showed the greatest damage, and that was really severe. There is also death of sugar bush where they are using the old-fashioned methods. The really disturbing thing is death of sugar maples where they are not tapping at all, so it obviously cannot relate directly to the tapping practices, although they may well make it somewhat worse.

The other disturbing thing from that visit was that we made a particular practice of looking at other tree species. The sugar bush operators, the farmers, are going to report sugar bush; they are not really interested in ash, beech and other things. In fact, they frequently cut these down to develop more of a monoculture of sugar bush. In the sites we looked at in Quebec where there was no cutting and other species were present, some of those were dying too. Some of these other species were also dying in the sugar bush that was tapped. It looked as if there was a spectrum of problems developing there.

We came back after we collected some material in Quebec and began to do some experiments in Toronto. We also then linked up with the Ministry of the Environment and connected with the growers who had been making complaints in the province. We also started a kind of letter survey of what is going on in the rest of the range of sugar maple in eastern North America.

Maybe I will start off with a few slides. You are probably going to have to use your imagination with some of these.

One of the great concerns is that what we have seen in Quebec may be the first indication of the sorts of problems--

Mr. Chairman: Excuse me, Dr. Hutchinson. Hansard is telling me that it is having difficulty picking you up. It is one of these problems we have. You have to speak into the microphone. I do not know whether you can accomplish that with moving the slides back and forth.

Dr. Hutchinson: I can just sit down.

I will go back to the first slide. One of the concerns many of us have is that what we are beginning to see now with the sugar bush in Quebec is really an extension of the problem that is now very extensive and absolutely devastating in central Europe.

There they have not been able to pinpoint it, but they do know that the Black Forest, and as I am sure everybody is aware, many of the forests in central Europe, Austria, Switzerland, West Germany and now also Poland, Czechoslovakia and East Germany--maybe I am going too quickly--all these areas are showing substantial forest decline.

Here is an area in the Black Forest that until four years ago had no decline in that particular area. I think you can see there is total devastation and obviously there is great concern as to the causes and what can be done about it. They are finding that many of the trees are showing nutrient deficiencies. There is the idea that acidification of the soil caused by acid precipitation and air pollution is a factor. The only thing you will get total agreement on is that air pollution is a factor in what is going on. Of course, we want to know whether the same sort of thing is occurring here.

It is not just confined to conifers. Here is beech in Europe that is showing this typical split bark symptom with dieback from the edges of the branches. As I say, this is very extensive.

As I am sure everybody is aware, we have problems at higher altitudes through the Appalachians and eastern North America. This is a summertime photograph taken on Mount Mitchell in South Carolina. I think you can see there that the forest is really dying from the tops down. There are two major species there, red spruce and one of the firs. The red spruce in particular is showing substantial decline almost throughout its eastern range now.

Again, the factors are not clearly understood. Air pollution is generally postulated to be at least involved in it. We have high ozone levels up there. We also have very acidic fogs occurring at these high altitudes. Some of the fogs have a pH--on Whiteface Mountain they have been recorded with a pH of 2.8, for example. We know that fog chemistry tends to be more acidic than regular cloud chemistry and that this is acid-leaching the foliage of these trees.

I am not trying to give you the impression that there is a straight link between these three cases. I am just raising the question that everybody now is asking: Is there a link between these three cases? There is a lot of symptomatology which is similar, but there are some differences.

If we move a bit closer to home, this is a picture in Quebec that is very traditional and very close to the heart of the French-Canadian people. To some extent that is true in Ontario too. They have nearly 9,000 growers in Quebec so it is a significant industry.

These are the sorts of decline symptoms you see with the trees dying from the tops of the branches and the crowns of the trees inwards. They die inwards and downwards. The leaves frequently become yellow or reddish early in the season--sometimes as early as the beginning of July--and the leaves become dwarfed. That tree is going to be dead within 12 months. From the onset of this problem a tree does not have much more than about two years. If you see it occurring one year, there is a good chance it is going to be dead by the end of the following season. It is not something that is taking its time and it is not something we can be unduly leisurely about in trying to address.

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Again, we see the split bark symptoms. All this suggests there is something the matter with the water supply to the trees, to the tops, or it could be that there is something the matter with the nutrient supplies to the tops. That could be due to direct foliage damage, but much more likely it is something becoming the matter with the root systems. The roots are not able to function in the normal way, we suspect, in terms of picking up water and nutrients.

For another picture to show you the same kind of thing, this is in Ontario. You will find lots of areas, especially in the Parry Sound area now, where the sugar bush operators are complaining of this sort of thing.

Another interesting thing is that once you have this in your bush, it tends to start with the largest, and naturally, your best trees, but ultimately it begins to affect all ages. It starts with the oldest but it will affect all ages. If you saw the trees down you can sell this as firewood if you get rid of it rapidly, but in Quebec they find that if they do not sell it within a year, the wood actually rots away in front of them. You can literally put your hand into this wood and crumble it up. It loses all its normal characteristics.

Some of this suggests there might be fungi involved, but all the studies so far have really not produced conclusive evidence that fungi are the prime cause of it. Of course, they will invade trees that are already dying, so that seems to be the situation.

In case some of you have not seen the vacuum systems, there are miles and miles of this running through the Quebec bush and to a lesser extent in Ontario. They have a gravimetric system that pulls the syrup from the trees--they have a little pump on it--and they run it right down to the sugar shack. They can sit in there smoking their pipes and wait for the syrup to be delivered.

As I say, they felt this was taking about 15 per cent more from the trees and all kinds of fascinating calculations have been done that indicate this should not be an undue stress on the trees. As I mentioned, we find damage in trees where the old, traditional tapping method is used.

In Ontario the occurrences are patchy. They are worst on the poorest soils and on the pre-Cambrian shield. That is right through cottage country, Muskoka, Haliburton, particularly Huntsville, across to Parry Sound. There are reports from the London area. There are reports from around Peterborough and down towards Kingston. There are pockets of it all over.

Another symptom is that the tap holes do not heal up as well. You can see they have tapped that tree pretty severely and there is a tendency when you are not getting sufficient sap to put a few more holes in the tree, which probably makes it worse. The wood does not seem to be able to heal the holes in the normal way either.

If I can switch across to the overheads, I want to show you a few bits of actual data.

Mr. Chairman: Members of the committee, while we are setting up for the overhead, I should mention that there is a photo album. I guess it is front of Mrs. Grier now. You might look at it and pass it on. Dale Willows, an associate of Dr. Hutchinson, has prepared it for us to take a look at. It shows the effects of dieback.

Once you get it positioned, Dr. Hutchinson, do you want to sit down on one of the chairs? They say that as long as you speak loud enough, they are able to pick you up.

Dr. Hutchinson: This is really a capsule view of where the problem is; where it has occurred. I think we could agree it is very severe in Quebec.

In Ontario it is moderate, in Parry Sound especially. In New Brunswick there are a lot of reports now, but I think we would describe it as moderate. I have not seen any reports from Nova Scotia. In Vermont, it is almost as severe as in Quebec in quite a number of places. It is reported in Massachusetts, in upper New York state and in New Hampshire. I have no information for Maine. In Connecticut it is also reported, and in Michigan, where the sugar bush occurs there, it is also reported, but at a low level.

By the time we get out to the western range of sugar bush--that is, in Missouri--there is no sign of any damage at all. In fact, sugar bush is actually invading their forests. When I talk to some of their scientists at St. Louis, they are quite keen that if we found out what was doing it, they would like to get it introduced into the sugar bush.

Mr. South: Accelerate it.

Mr. Hutchinson: Yes. They would like to get rid of their sugar bush. They are not tapping it and it is a nuisance tree. One person's problem is somebody else's advantage.

What we have been doing is that we have selected six sites in Ontario where there have been complaints. Then we have used the Ministry of the Environment indexing system which assesses the amount of canopy, the health of the canopy and the amount of branches; things of this kind. It is kind of a complex system.

These are representing decline indices.

You need not worry about any of the data except that you will see at the bottom we have the name of the growers, so there is Muller, Ungard, Veitch, etc. There are six of them. They have all complained about the state of their bush.

We went into the bush of the first three growers on the left. You will see two little histograms for each of them. Within a limited area, we deliberately selected healthy bush and declining bush. We recorded the trees on an integrated basis. If your decline index is above about 20, any person or any member of the public would go in and probably recognize there was some problem. That is a kind of rough cutoff. If it is above that, we would probably think there is a problem. So each of the ones we selected for deliberate decline is above 20, and some trees within it are up there at 50 and 60. There is one in the Boothby site that we did not think was any problem, even though Mr. Boothby thought there were some problems.

The advantage of having sites within very close proximity of each other is that we can be sure that the climate conditions and the soil conditions are largely going to be the same. We can get rid of a lot of other variables.

Mr. Wiseman: In what part of Ontario did you take these slides?

Mr. Hutchinson: Around Huntsville and up in the Magnetawan area.

Then we did foliar analysis. This is just to get an assessment of the trees. This slide shows the concentration of calcium in the healthy trees. Again, do not worry at all about the numbers. It is just the pattern: healthy-declining. Each time, the trees from the declining site have substantially lower levels of calcium. Do not worry about the three on the end. That is an additional story.

Magnesium, another essential element--another of these essential bases--is showing the same pattern. So we have calcium decreases. I will not say deficiencies, but we have significant decreases in calcium and in magnesium.

Mrs. Grier: Can I just ask a question? Are you looking at the trees within the same lot; healthy trees and declining trees?

Mr. Hutchinson: Each of the pairs under "Miller" is within the same lot; healthy and declining. They are within a reasonably short distance of each other.

This is for phosphorus, which is another really important and frequently limiting element in the forests. When you get your lawn fertilizer bag which has the three numbers like 7-7-7, that always refers to nitrogen, phosphorus and potassium. This is the phosphorus part of it. Again, there is a significant decrease in phosphorus at some of these sites.

Nitrogen--another of the big three for plant requirements--is also substantially reduced. We can go on like this, but what this is really saying is that not only are the trees showing decline but also the foliage of those trees is signalling to us that it has some substantial significant nutrient deficiencies and that these trees may be growing in fairly close proximity to each other.

This is a rather scruffy one. We brought soil back from Quebec, collected either under healthy trees or under declining trees a short distance away. We are talking about distances the length of this room or less. We went around and deliberately collected soil within healthy and declining soils. We took upper soils--that is really the organic matter and the humus--and then we took the mineral soils underneath. We sieved it, put it into pots in the greenhouse and then we grew sugar maple seedlings in this soil. Really, we are asking the plants to tell us whether there was any difference between these soils, and the answer they gave us was quite substantial.

We are looking at growth here. This happens to be leaf area. As you can see, in the healthy soil, the plants gave us 176 square centimetres of leaf area, and in the declining soils, grown for the same length of time and under the same identical greenhouse conditions, they gave us only 70. That difference was confined to the upper soil which, unfortunately, is the rooting depth. Sugar maples are rather a shallow rooter. Most of their roots are in the top five to 10 centimetres. In the mineral soils, there is really no difference.

Another thing you will see is that if we looked at the average pHs for these soils, the soil from the healthy trees had a higher pH than that of the declining trees. To put it another way, the declining trees seem to have more acidic soil. We do not know, historically, whether that is a recent event, which we believe it is, or whether it has always been the case. It seems much more likely that it is a recent event. Otherwise, all the trees would have been in decline some time ago.

The pH is exactly in that region of acidity where you are going to get some rather toxic elements going into solution. Since especially aluminum will go into solution around about pH 4.2 as the pH goes down to four, to 3.8. The suggestion is that there has been soil acidification taking place, perhaps on the poorest soils where it would take place more easily and, again, the

suggestion is that this might be atmospheric inputs that are involved in this.

Mr. D. W. Smith: Does it have any effect on the ability of the tree to produce sap?

Dr. Hutchinson: Yes. As it loses its figure, there is a very big effect.

This one probably looks a bit complicated. We will deal just with the two on the left-hand side. This time, we have growth on some soils from Ontario, doing a bioassay; that is, growing the seedlings on them again. Here we have growth. The solid black is on the healthy soil and that little black blip at the bottom there is on the unhealthy soil from the same site. So we repeated that.

Mr. Wiseman: Where was that picture taken; the sample? Huntsville, again?

Dr. Hutchinson: Near Magnetawan.

Mr. Wiseman: Where is it?

Dr. Hutchinson: Magnetawan is on the way up to North Bay, between Huntsville and North Bay.

Mr. Wiseman: In the Muskoka area.

Dr. Hutchinson: Right.

On the second one, you will see the same pattern repeated; healthy, declining. Each time we put them on a declining soil, these plants are telling us that there is something substantially the matter with that soil.

Mr. Wiseman: Can I ask a question? When we got a survey from the Ministry of the Environment, it showed that most of them in the Muskoka area were active either one to three. I wonder why you would not do a comparison with eastern Ontario. Both of these seem to be in the Muskoka area, where we know there is a lot of acid rain and so on going in there; we have a lot of limestone and everything in eastern Ontario and most of our lakes are in the five range.

Would it not have been a good comparison? Because the soil cover in northern Ontario, or in the Huntsville area, and everything that I am fairly familiar with, is very shallow and would lend itself to take on this condition faster, maybe, than where it is a little deeper, in some parts of eastern Ontario.

Mr. Hutchinson: I agree with you 100 per cent. In fact, this summer we are doing exactly this comparison.

Mr. Wiseman: This would look much worse than down our way.

Mr. Hutchinson: But why should it happen at all? Why should this suddenly be happening in the 1980s?

Mr. Wiseman: But it would be interesting in your--

Mr. Hutchinson: There has been sugar bush growing there for years

and years and years.

Mr. Wiseman: All I am getting at, for us to compare, like you are--you are building in the worst scenario there is, I think, unless you--

Mr. Hutchinson: I am going to where the growers are complaining.

Mr. Wiseman: I would like to know where it is in Quebec. Are you taking the worst scenario in Quebec as well, so that we get a clear picture of what we are doing? Muskoka seemed to be the worst.

Mr. Hutchinson: The Muskokas and the Parry Sound area are the worst for sugar bush decline. There are reports from these other areas, as I indicated.

Mr. Wiseman: I have a few down my way, but I just thought--

Mr. Hutchinson: What we are doing this summer is exactly what you suggested. We are going back to a much more extensive area, including a whole range of soil types, and we are collecting soils and analysing these things and running these sorts of assays again, but I could not tell you about that until about the middle of July. It does look as if something has gone wrong with the soils, for some reason, on these pre-Cambrian shield areas in the Muskokas. The question is why, and what can you do about it?

One of the things you can do about it is starting up various fertilizer and nutrient additions, because the growers, maybe, are not too interested in why it is happening: they want to be able to do something about it before they lose the bush.

On your declining soil, there is very little growth at all there. If you add magnesium to it, which is what they have been doing in Germany, there is not much response. If you add phosphorus to it--can you see this one here?--there is that phosphorus response on the declining soil, compared with the declining soil with no phosphorus added.

You will see, each time we look along where I have written a little "p" on top of these declining soils, there is a very substantial response, at least in the greenhouse, which might not relate to the field. You can alleviate this problem by adding phosphorus. That certainly relates to the nutrient analysis for the foliage and it relates to this acidification problem with aluminum, because--without getting too complex--one of the symptoms of aluminum toxicity is that it actually causes phosphorus to be deficient to plants; they cannot get sufficient up to the tops.

Mr. Haggerty: Is there a deficiency in lime, though? In my area, if you do not have a sufficient supply of lime in the soil, your soil becomes acid.

Mr. Hutchinson: Yes. They do not normally add lime in forests, of course, but with agricultural soil, that is normal practice. Where we add lime--the next one, please; this is getting incredibly complicated--now we sort of went mad and added all sorts of kinds of different fertilizer combinations.

Let me summarize. Each time you look at the little "p," you will see there is a big response; that is, each time we added phosphorus by itself. Lime by itself is one of these that is much lower down, in here. We were not

getting a big response to lime. I am a bit surprised, because I thought if we put the pH up, that would probably stop some of these other problems. It looks as if there is a genuine phosphorus deficiency, as well as problems with acidity.

All of that--how can we interpret this? The first thing is, I think we have to get a lot of work done in a hurry for the benefit of the growers. We are pressing the Ministry of the Environment that it should be considering a whole series of fertilizer trials. We do not want to get the growers loose in there, with fertilizers, because it could actually make things worse. It has to be some prescription thing, based on analysis of that foliage and doing some of these assays on the soil.

That will not solve the problem but it might give them time, it might give us all time, to get something done about whatever is causing it. Unfortunately, although I started off thinking acid rain was what everybody wants to bash everyone else on the head about, it does seem to me that the evidence at the moment is rather in favour of acid rain being the factor in this.

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Mr. Haggerty: Has the Ministry of Agriculture and Food carried out any studies similar to this, say in the fruit belt of the Niagara region?

Dr. Hutchinson: No, I do not think they have so far.

Mr. Haggerty: You are not aware of it at the Vineland research centre there?

Dr. Hutchinson: No, they have not. The Ministry of the Environment has done some foliar analyses. As far as I can say no one has done any of these assays using plants to grow in the soil. I am in close touch with the people in Quebec and they are coming to similar conclusions. As I say, our assays on the Quebec soils gave us the same sort of pattern. That makes it most unlikely it is management. It is most unlikely that is poor management. It is most unlikely it is overtapping, most unlikely it is tent caterpillar damage because it could not do that to the soils.

Mr. Wiseman: Did you do anything with the age of the trees, or find an area that 40 years ago was burnt off and now they have young maple trees, and to kind of go back and say that it may be acid rain, the last 40 years they are showing more, maybe the older trees have become immune to it, or whatever, or new trees in a forest where there are existing ones to see if there was more, like a young tree--I do not know, you would know better, but you might think a young tree would react to acid rain more than maybe one that was mature and had been there for 100 years or 80 years or whatever. Have you studied that part--

Dr. Hutchinson: No, we have not really looked at that aspect.

Mr. Wiseman: --to kind of justify that you think it is acid rain that is doing this--

Dr. Hutchinson: I am only saying that, increasingly, it is coming from--

Mr. Wiseman: --because some of those trees you showed have been

there a long time.

Dr. Hutchinson: Pardon?

Mr. Wiseman: Some of those trees you showed with those spoil marks are pretty old trees. They have been there a long time.

Dr. Hutchinson: Right.

Mr. Wiseman: Without even looking at the rings you can tell by the tree.

Dr. Hutchinson: The thing is, it tends to happen in the mature trees first and then gradually goes through the area and affects the younger trees too. You will, eventually, in some of the Quebec sites, get total elimination of your bush. Other species have been affected too, so our concern really is not only are we beginning to see it in Ontario and we see it strongly in Quebec, it may be more than just a sugar bush problem; it might be a general hardwood problem that is on the verge of occurring.

Mr. Partington: You said acid rain may be a factor. What other factors do you suspect, other than the ones you have discounted?

Mr. Chairman: Dr. Hutchinson, before you respond to that, if you are finished with the slides--

Dr. Hutchinson: Yes.

Mr. Partington: In your statement you said that this looks more like acid rain is a factor and you discounted certain others. What other factors do you suspect?

Dr. Hutchinson: I am using acid rain in a very collective way. I think we have to consider the soil acidification may now be occurring in an abnormal way. Therefore, we have to look at acidic inputs into the soil and that would be gaseous pollutants, such as sulphur dioxide, nitrogen oxides could be a factor in it so you have nitrates and sulphates that you are all talking about here. A lot of these are occurring when it is not raining, that is a settling out, as dry day position onto the foliage of these trees, and when we collect in the boreal forests, not these same sites, when we collect the water running down the trunks of trees, we have some incredibly acidic solutions running down there now, and they are really dissolving all of these particulates off the leaves when it rains, so that you not only have the acid rain from the precipitation itself, but they then wash all of this material down on to the ground underneath and into the soil. That is what we think is happening.

Mr. Haggerty: The studies that you have completed so far have been in remote areas, they have not been around a mining processing facility that would perhaps have a little heavier pollution coming out, such as sulphuric--

Dr. Harrington: No. We have done a lot of work at Sudbury, but not related directly to sugar maple.

Mr. Haggerty: Not related to that but is there anything close to Sudbury that relates to sulphuric dioxide or acid?

Dr. Hutchinson: Certainly the forests in the Sudbury area in the

past have been really devastated by sulphur dioxide and sulphuric acid aerosols and by the addition of airborne metal containing particulates to the soils. If you look at the concentrations even now in the surface layers of the soils that are still there around Sudbury, you will find a very heavy loading on the surface.

Mr. Haggerty: Of what, heavy metal?

Dr. Hutchinson: Nickel and copper, cobalt.

Mr. Haggerty: Heavy metals then. I was just wondering, I know east of the operations of Inco in the city of Port Colborne, when heavy sulphur dioxide, through the prevailing winds, would go out through the communities, it would burn trees and grains in that area. Your study, though, was not related to any really remote areas. It would not be coming directly from--

Dr. Hutchinson: No. We are collecting soil from the field where whatever is happening is happening, bringing it back to the greenhouse and growing it under controlled conditions. Then it is just the soil that is causing the problem, but out in the fields something is causing the soil problem, and I think it is air pollution.

At Port Colborne we did a study on the little forest plantations around there. We found the interesting thing is that the litter that falls on to the soil surface each year is not really decomposing. The microbial systems that would normally break down the litter are not functioning down there, and it is largely due to nickel. They have poisoned the microbial systems in the soils there, so we actually have an accumulation of litter going in each year.

Mr. Haggerty: You have not gone up into, say, the Grey-Bruce area along Highway 10 or Highway 6. I have noticed there over the years what you describe. The foliage would be turning yellow in July, and when you go up there now, the trees are almost dead, completely gone.

Dr. Hutchinson: I am describing the sugar bush where the growers are, but there is no doubt--Dale Willows has probably passed around something to people here. She lives out towards Guelph, and her group has been documenting what is happening in the farmers' fields and in the hedgerows and things. I think they have pretty good evidence that not only sugar maple trees but also several other species are dying.

I live out in the Uxbridge direction, where the sugar maple trees are dying extensively. I was looking at some last night actually. They have given up on a row of about 20 beautiful sugar maples. They have just been sawed down and hauled away. This is happening all over, right out to Kingston.

Mr. Haggerty: Who is funding your research?

Dr. Hutchinson: This research is funded by the federal National Science and Engineering Research Council, NSERC.

Mr. Haggerty: Is there sufficient funding to continue carrying out research?

Dr. Hutchinson: There is sufficient funding to do this rather small-scale, look-and-see investigation, but not to go on to significant field trials, which is why I am pushing the Ministry of the Environment and the Ministry of Natural Resources to get into this.

Mr. Haggerty: In other words, this is just seed money? There is nothing that is coming--

Dr. Hutchinson: I think it points the way they should be looking.

Mr. Charlton: No pun intended?

Mr. Haggerty: No. I think it is great we can have research done in this area, as long as we continue funding to complete it. Then we will know the full directions we should be heading for in the recommendations of the committee.

Dr. Hutchinson: I am not in here making a plea for research funding for myself, but there is no question that to handle the sugar maple situation, more research funding is required, both within government and externally. There is more manpower required. I gather the Ministry of the Environment's biggest problem is manpower. They need more people to be able to do the work.

Mr. Chairman: Dr. Hutchinson, does it feel somewhat frustrating that, to a certain extent, you are treating a symptom? I think it is great as far as the fertilizing techniques are concerned and I hope they will work out in actual field trials rather than just in the greenhouse, but there is still the cause. I know you are wrestling with the probabilities of acid rain being the cause. It is somewhat frustrating for you, I guess.

Dr. Hutchinson: It is, because we are really trying to come up with Band-Aid solutions to a rather massive haemorrhage which seems to be going on. I am certainly not enthusiastic about rushing into things without knowing the facts, but even if it ultimately turns out that acid rain is not the major cause of the sugar maple problems, it seems very probable it is pushing things over the edge. Some general problems are now being more stressed by that.

I think we have a terrific body of evidence in what is happening to the lake systems and the river systems. We have a cast-iron case now, as far as I am concerned. We do not need to worry about the sugar maple to make the case, but the sugar maple, if it is the forerunner of a hardwood problem in general, or maybe a forest problem in general, is going to make the economic case in spades. This could really be a huge problem.

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Mr. G. I. Miller: This afternoon, we had Mr. Wegman in from the US, and he said in his presentation that they brought in high-stack legislation in the middle 1970s. I recall when Ontario Hydro built its plant at Nanticoke that the way to go was with the high stacks. They built 500-and-some-foot stacks at Nanticoke. They built a high stack at Sudbury, and it has relieved and improved the area around Sudbury, which we had a chance of looking at, but it has also put it up higher and spread it farther. Is there any evidence in your studies to indicate that this may have been the wrong direction to go?

Dr. Hutchinson: As you say, there are two points of view. If you lived in Sudbury, you would probably be very glad they put up the stack.

Mr. G. I. Miller: It looks much better, yes.

Dr. Hutchinson: Yes, there is no doubt the air quality in Sudbury has improved substantially. There is also no doubt that the sulphur dioxide, even though it has been reduced overall, is now shifted farther out and is adding quite significantly to the acid rain problems.

Mr. Charlton: Take a look at the recent reports from Timiskaming.

Dr. Hutchinson: We were working up in the boreal forest near Kirkland Lake as well, and I picked that area thinking it is 700 kilometres north of Toronto and it should be pretty clean. But we have an average rain pH coming down at 4.2 there and we have had some individual events as low as 2.9.

Mr. South: Where is this?

Dr. Hutchinson: Near Kirkland Lake. It has nothing to do with Kirkland Lake. It is a nice piece of pristine boreal forest, but that is 700 kilometres north of Toronto, so this acid rain problem is very extensive.

Mr. Partington: You mentioned that acid rain may be a major cause, but there are others. Is another air pollution generally, other than acid rain?

Dr. Hutchinson: Air pollution generally, yes.

Mr. Partington: Is there a percentage? For example, what percentage of the air pollution in the environment is acid rain, what percentage of it is everything else and what is the everything else?

Dr. Hutchinson: That is an impossible question. I cannot answer it. I will give you a few guesses, but they are not worth much.

If you look at the acid rain, the contribution of that, sulphur to nitrogen, is approximately two to one or sometimes 2.5 to one. Therefore, you could say that of the major constituents of acidity in the atmosphere, we have about 60 per cent from sulphur and about 40 per cent from nitrogen.

The other things I am saying might be involved are things like ozone, which would be a much smaller percentage actually in Canada. It is a big one in the US, but it is much less so here. Then there is the question of dry deposition of nitrates, particulates falling out of the atmosphere. They are not being washed out by rain; they are just drifting down and adding to the acid rain. It is coming down at about the ratio of six to four.

Mr. G. I. Miller: Does the automobile play a role?

Dr. Hutchinson: It plays a role in the nitrogen oxide contribution.

Mr. G. I. Miller: A major role?

Dr. Hutchinson: It is fairly significant, yes.

Mr. G. I. Miller: From your study of the federal Department of Agriculture and of the provincial agriculture ministries in Quebec and Ontario, are they very involved in researching this?

As the parliamentary assistant to the Minister of Agriculture and Food (Mr. Riddell), I did a little checking at noon, and it does not appear that ministry is doing that much research. They are as far as the promotion of tapping and improving the pipelines and being energy-efficient is concerned, but there does not appear to be much research. They do not seem to have too much at hand.

We had in the Minister of Natural Resources (Mr. Kerrio), and there did not appear to be too much research being carried out by his ministry. What are

your views? As my colleague indicated, this committee has to make some recommendations.

Dr. Hutchinson: If you want a sort of batting order of levels of concern, involvement and research by the ministries, then the Ministry of the Environment is much the most active in this area. Of course, that is its mandate, but I am surprised at the lack of concern and the lack of commitment--

Mr. G. I. Miller: I do not want to say there is a lack of concern. I am not pointing my finger.

Dr. Hutchinson: I am saying lack of concern from the Ministry of Natural Resources. It seems to be picking up a little bit, but many of them are not convinced there is a problem. They agree there is a serious problem in Quebec, but they cannot see that it is the same thing here. That strikes me as rather head in the sands, and the Ministry of Agriculture and Food is some farther distance back from that. Generally speaking, sugar bush operations are small potatoes for the Ministry of Agriculture and Food. Excuse my pun.

Mr. G. I. Miller: When you talk about using fertilizers, that is in the agricultural field. They should be experts in that and be able to lend their assistance.

Dr. Hutchinson: That is right. In a sense, my recommendation would be that we gear up to some kind of advisory service in the way the Ministry of Agriculture and Food deals with farmers, an extension service in which the sugar bush growers can send soil and foliage samples to somewhere that will diagnose them; not in the way Guelph does at the moment, because it is a different problem. We do not need to do big analyses for nitrogen and things. We need to have it much more specific. Then they would come back with recommendations for these guys once they have done trials.

We need to set up some kind of analytical advisory service so that help can be given, whether it is in the private sector or within government. I have no views on that. They are doing exactly that, they are moving to this in Quebec. In Germany, although the problem is a little bit different, they have just allocated 140 million--I do not know whether it is Deutschmarks or dollars--for fertilizing their forests, in a desperate attempt to turn things around.

The Ministry of Agriculture and Food, with all its experience in that field, would be a good one, but it is not convinced there is a problem right now.

Mr. D. W. Smith: I asked this question this morning of Dr. Mastromatteo. In my area, and I come from around Lambton and Sarnia, when the fruit growers down there know there is rain coming, they go out and spray their trees, because the acid rain will mark the fruit. I do not know what they spray with, whether it is clear water or whether there is something in the water. I was asking Dr. Mastromatteo whether this is only a mark on the fruit or whether the acid rain is actually penetrating into the product and, therefore, it is a human consumption problem more than just a problem of poor-looking product. Have you done anything on that or do you know anything about that?

Dr. Hutchinson: We have done some similar things, but we have not done anything directly on the fruit. Most of the fruit, such as apples, pears and even tomatoes and so on, have a nice, waxy, protective outer layer. It is

quite difficult for other than extremely strong acidic droplets to penetrate; but as they evaporate, as on your windows at home, they leave behind any dissolved material.

Mainly, it blemishes the appearance of the fruit. That is why they go out and try to wash this off in advance. The deposition from the air has all kinds of materials dissolved in it. On the leaves of quite sensitive species, you can have actual burn marks left from very strongly acidic rain events. That is rather rare, but it has been recorded. The main problem that the growers are trying to look after there is the physical appearance of the tree.

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Mr. D. W. Smith: Have you done any comparison testing where you were talking about those maple trees up in the Muskoka area? Are there any orchards around there, or will orchards grow that far north?

Dr. Hutchinson: They grow just a few individual trees. There are no organized orchards that I am aware of.

Mr. D. W. Smith: So you cannot make a comparison on that line?

Dr. Hutchinson: No, but there are reports of this problem for sugar maple now around London. We are certainly getting into orchard country there, and out towards Kingston there are orchards, so some comparisons will be possible.

Mr. D. W. Smith: You mentioned what they are doing with the maple tree. My brother has a very small maple syrup setup. The inspector was there quite a bit this spring. They were trying to test for the sugar content of a tree. They were quite surprised, I have to say. They had trees testing as high as nine per cent sugar content, and that was baffling them because they had other trees that were down as low as a little over two per cent sugar content.

There has to be some concern for our forests out there. I know a few years ago, about 10 years ago, we were being accused of cutting too many of them down. Now it looks as if, somehow or other, nature or acid rain is taking its toll.

The other thing I want to know is whether there is anything with the nuclear problems around the world, because our winds come from out of the west? Is there any way that nuclear problems we are not always aware of happening could be causing some of these problems?

Dr. Hutchinson: I do not think these problems relate to nuclear fallout, not even Chernobyl. You are probably right, however, that in the Arctic, where they get a higher concentration of this fallout--it does not relate to sugar maple or acid rain or anything, but there has been a significant trail of radioactivity falling across the Canadian Arctic and it has accumulated in the lichens out there. We know now, from some work that professors at Erindale College have been doing, that there is a fairly significant contamination of caribou meat. The problem is serious in Lapland. The levels are way too high.

Mr. D. W. Smith: Do they not relate that to Chernobyl?

Dr. Hutchinson: They relate this to Chernobyl. I am saying there are problems now for caribou in the Canadian Arctic. These have been documented.

For what it is worth, they have a safe level for caribou meat. I do not know how they worked that out, but, anyhow, 60 becquerels is the radioactivity limit. The work they have been doing at Erindale on caribou is coming in at 500 becquerels.

Mr. D. W. Smith: It is way too high.

Dr. Hutchinson: Yes, it is, and that is because of Chernobyl. That was 3,000 miles away.

Mr. D. W. Smith: How long have they been studying the meat on the reindeer?

Dr. Hutchinson: These will be samples taken last fall and during this winter.

Mr. Charlton: It means a problem now with the reindeer herds in Sweden as well.

Mr. Chairman: Mr. Smith, this is--

Mr. D. W. Smith: I am sorry. Am I deviating a bit?

Dr. Hutchinson: We are outside of the province and we are outside of sugar maple and acid rain.

Mr. D. W. Smith: Sorry about that, Mr. Chairman.

Mr. Wiseman: Have you ever looked at the fact that we have had a run of tent caterpillars over a number of years? Using my own trees as an example, on the way in I have a lot of maples. The one or two on the way into my house that look like the pictures that were passed around were ones I should have sprayed, but did not. Now they are dying off.

Speaking as a layman, it stands to reason that if a certain portion of that foliage is eaten off for two or three years in a row--like we saw, most of the leaves that fell down were eaten off--the tree is not so healthy and, therefore, may respond more to acid rain than do other trees. That may be some indication as to why, going up to my house, I have 10 or 12 maple trees and only one or two are bothered with that at the very top. The branches are starting to die off and dry up similar to the Dutch elm disease, only it seems to take a heck of a lot longer.

Did you ever investigate that? All through eastern Ontario we had bushes that were infested over a period years back, maybe five or six years ago, with tent caterpillars. Some farmers sprayed; some did not. I have thought that people get on the bandwagon and say, "It is acid rain, it is acid rain," and yet maybe they are not thinking back to what weakened those trees and put them into a condition where maybe the acid rain now is the last straw. It is something like a person's health; where you are in a weak position, you could take on some other disease when you have been weakened, and a tree may not be all that much different from us.

Dr. Hutchinson: There is no doubt that tent caterpillar damage was extensive and it certainly did hit maples. In fact, quite a lot of trees died.

Mr. Wiseman: That is why I asked the question, because we have the maples here.

Dr. Hutchinson: It occurred for two successive years and in some cases it occurred for three. That is a pretty heavy blow to the trees, and as I say, some of them died. The interesting thing is that that was between about 1978 and 1981. The ones that did not die recovered fully.

You are talking about somebody who is sick. Now, this is somebody who makes a complete recovery. So there were about two years and sometimes three years of complete recovery, and then they have gone down from whatever it is; they have gone down with maple decline. It seems to me most unlikely that you can pin that on tent caterpillars.

Mr. Wiseman: Mine has not made the--

Dr. Hutchinson: Has not made the full recovery.

Mr. Wiseman: No. In fact, this year the bark is starting to fall off, similar to what it did with the Dutch elm disease. When I get underneath it to rake it, I find pieces of bark as long as my arm and this sort of thing. So it has not had a complete recovery; neither has the other one. The other one was not infested the same way as this one, but I would have had to get a heck of a big sprayer in to spray the top of that tree. I should have, but I did not.

Dr. Hutchinson: Some people in the Ministry of Natural Resources will certainly tell you that tent caterpillar has been the major problem, but if you look at the areas in which tent caterpillar occurred and the areas in which the maple damage is occurring, they do not fit perfectly; by no means perfectly. There are a lot of areas in Quebec, and I was talking to them about it last week, in which they have tent caterpillar damage with no subsequent decline, and they have other areas in which there was no tent caterpillar damage and in which all the trees are now dying.

Mr. Wiseman: Did they spray in the ones that have recovered?

Dr. Hutchinson: No, they did not spray in most of these areas.

Mr. Wiseman: Knowing a little bit about what fertilizers will accomplish and one thing and another, we heard earlier today that not everything with acid rain was negative, that there were some positive--I forget what content it is of fertilizer that the acid rain drops.

Dr. Hutchinson: The nitrogen, probably.

Mr. Wiseman: In your survey, do you believe that amount of nitrogen could be burning things, that it is too heavy--

Dr. Hutchinson: It is not exactly burning them.

Mr. Wiseman: --similar to what happens if we put too much on the crops, and it is that part of the acid rain that is making the trouble?

Dr. Hutchinson: No, I think it is acidifying the soil in the sugar bush.

I want to jump back to your tent caterpillar question, because that is a nice idea and it has a lot of merit, but I think the thing that kills it dead in the water is that when you look at the soils beneath the trees and bring these back into the lab and try to grow your plants on them, under the

declining trees, that soil is telling you there is something substantial the matter with it, and under the healthy trees it is telling you there is not that same problem. That cannot be tent caterpillar damage.

Mr. Wiseman: I do not know, you are the doctor, but if that tree is not well, it is probably drawing different nutrients out of the soil than a healthy tree, would it not?

Dr. Hutchinson: Right, but it would be the other way around, would it not?

Mr. Wiseman: You could have a different makeup of the soil, could you not?

Dr. Hutchinson: You would expect your healthy tree to be taking out more nutrients than the dead one.

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Mr. Wiseman: But would a healthy tree not take a more balanced diet out of the ground than an unhealthy tree?

Dr. Hutchinson: It is not a question of balanced diet. I think you saw from the foliage analyses, there is a whole slowup when they are in trouble.

Mr. Wiseman: But if one took up more balance, then it would show when you took the soil samples that they were more evenly divided, the phosphorus and whatever, but if you had a sick tree, it would seem it was maybe drawing different things it needed out of the soil.

Dr. Hutchinson: No. It would just be drawing less. Why would it be different? It would just be less. You would expect your unhealthy tree, growing rather poorly, to have less demand on the soil than a healthy tree growing well. Therefore, if it was simply a question of relative pulling down of soil nutrients, then the healthy trees should be the ones depleting the soil, and we find exactly the opposite.

The depletion seems to have taken place beneath the declining trees, and I do not think it is caused by the declining trees. That is most unlikely. It is much more likely that the soil problems have caused the decline than that the declining trees have caused the soil problems. I think it is the other way around.

Mr. Wiseman: You see tent caterpillar strike a certain area and not another. I think you will have to agree in your surveys, even though they are real close together, you will find a difference in the soil conditions of the healthy trees and the nonhealthy trees and so on. It seems hard for me as a layman to understand why it would not cover that small an area in the same way and affect all the trees instead of just some. I thought it must be pulling the healthy--

Mr. Charlton: Perhaps other things are happening, like drainage patterns and the low areas getting affected more than higher areas.

Mr. Wiseman: Yes, these things can happen, but I imagine he was trying to compare the same so we would get a comparison. If he did that, then it would make the thing way out of whack as far as I am concerned.

Mr. Kinch: Something to keep in mind, though, is that all of these trees were defoliated. There were not patches defoliated. In the years that the forest tent caterpillar went through, these forests were almost entirely defoliated two years consecutively. All of the trees were defoliated, not a patch here and a patch there.

Now we are looking at what differences, superimposed upon the forest tent caterpillar infestation, are predisposing one tree versus another tree or one area versus another area to be susceptible to other things--acid rain being one I suppose, and a whole host of other things like drainage patterns.

Mr. Chairman: Pardon me. If we might move on in the interest of time, Mr. South is next, and I would take that as being the last question.

Mr. South: One of the characteristics of acid lakes is that they become quite clear. Acid rain is causing the leaching out of phosphates from the soil and yet it is not stimulating growth in the lakes. What is the countervailing thing that is happening? These lakes should become richer with the leaching out of the phosphates in the soil surrounding them.

Dr. Hutchinson: That is an ingenious idea. I have never met that one before, so I will only have to guess the answers. It is a very interesting idea.

Mr. South: I do not know if Wayne Scott would know. What is the countervailing thing that happens there, Wayne?

Mr. Scott: I do not know. I do not think we have looked at the chemistry of what is happening to see if there is a significant shifting of phosphorus.

Mr. Chairman: Mr. Scott, if you are going to be on the record, would you mind coming forward.

Mr. Scott: Maybe I would just as soon not be on record.

Mr. Chairman: I gave you the option.

Mr. Scott: In the water area, we have not looked specifically at the chemistry and phosphorus levels in lakes that are showing more impact than other lakes. So we cannot really see whether or not there is going to be a change. Phosphorus could be leaving and migrating and be showing up in a large number of things.

It is a question I would like to put to our experts who are currently looking at how all aspects of the watershed are actually impacting upon the water as it moves. As Dr. Hutchinson indicated, materials are being leached from the trees. The actual chemistry of the water falling as rain and moving in through the forest, through the canopy, down the stems, along through the leaves and into the soil, is changing at every step along the process. It would be a matter of trying to look at the whole thing, to look at where the phosphorus is and then where it is moving through in that whole aspect.

It has not been a major concern, but it is a question that could quite easily be put to the experts who are looking at balancing all of the ions in that kind of a setting. That is probably where the answer lies, and it may be fairly simple. Out of interest, I will phone to see if I can find something for you.

Dr. Hutchinson: Mr. Chairman, could I just add one little thing to that? The evidence we have at the moment is that it is just in the surface soils, in the organic mat, which is maybe 10 centimetres deep, that this problem is occurring. A lot of the sugar maple is growing in much deeper soils than that. There is no doubt in my mind that most of the phosphorus that has been lost from the surface layers has simply been redeposited lower down but, unfortunately, below the rooting mat of these roots that normally expect to get the phosphorus in that top few centimetres.

Mr. Kinch: Could I add to that as well? There is the possibility that the phosphorus is not being leached at all and that it is actually aluminum that is being mobilized and tying up phosphorus; not actually a leaching but a complexation.

Dr. Hutchinson: The aluminum precipitates. In the presence of phosphorus, the two will precipitate together. It goes out a solution, so it is not available for uptake by plants.

Mr. Chairman: Thank you very much, Dr. Hutchinson and Mr. Kinch, for appearing before us today. You have brought some information on one of the potential effects of acid rain that had not been brought to us before. Thank you very much.

Dr. Hutchinson: It is our pleasure.

Mr. Chairman: The committee is adjourned until 10 a.m. tomorrow.

The committee adjourned at 4:37 p.m.

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, APRIL 16, 1987

Morning Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
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Charlton, B. A. (Hamilton Mountain NDP)
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Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Haggerty, R. (Erie L) for Mr. Poirier
Smith, D. W. (Lambton L) for Mr. Henderson
Wiseman, D. J. (Lanark PC) for Ms. Fish

Also taking part:

Wildman, B. (Algoma NDP)

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Algoma Steel Corp. Ltd.:
Paterson, R. G., Vice-President, Engineering and Technical Services
Jennings, M. T., General Manager, Coke and Iron Production
Craig, F. L., Supervisor, Environmental Controls

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, April 16, 1987

The committee met at 10:08 a.m. in room 230.

ACID RAIN
(continued)

The Vice-Chairman: Members of the select committee on the environment, the people from Algoma Steel Corp. Ltd. are here this morning. It is almost 10 after nine. I understood the member for Algoma (Mr. Wildman) was coming in.

Mr. Haggerty: Acid rain is holding him up. It made the conditions a little slippery out there.

The Vice-Chairman: I would like to welcome before our committee Gordon Paterson, vice-president, engineering and technical services; Mike Jennings, general manager, coke and iron production; and Fraser Craig, supervisor of environmental controls. We look forward to your presentation. Mr. Paterson, are you going to be the spokesman for the group?

ALGOMA STEEL CORP. LTD.

Mr. Paterson: I might add that Mr. Jennings, previous to his present position, was general manager at the ore division in Wawa, and consequently is quite familiar with the situation there.

The Vice-Chairman: Okay. Do you want to introduce the other two gentlemen for the benefit of the committee?

Mr. Paterson: I am Gordon Paterson. I hold the position of vice-president at Algoma Steel. On my left is Mike Jennings and on my right is Fraser Craig, who is supervisor of our environmental control department in the Sault.

The Vice-Chairman: Mr. Wildman, we have just introduced the Algoma people this morning. As the member for that area, do you want to make any comments?

Mr. Wildman: Not off the top. I welcome the representatives of Algoma Steel to the committee. I would like to hear their views as to the relationship between the control order, the efforts to cut emissions and the current production levels at Algoma Ore division in Wawa.

Mr. Paterson: Mr. Chairman, I see that the committee has copies of our brief. With your permission, perhaps Mr. Jennings will review it and run through it page by page, or would you prefer that it be read word for word?

The Vice-Chairman: If you would like to go through it, we do have all morning.

Mr. Jennings: Algoma Steel Corp. is Canada's third-largest integrated steel supplier, located at Sault Ste. Marie. Our major products

from the steelworks are seamless tubing for the oil and gas industry, steel plate, rails, wide flange beams in the construction industry, hot and cold rolled sheet and strip.

Algoma Steel has operated the Algoma Ore division, which we refer to as AOD, 145 miles north of Sault Ste. Marie in Wawa since 1939. Algoma Ore division consists of an underground mine and a sintering plant. Algoma sinter is a porous, clinker-like material containing about 49 per cent iron and is used as one of the feeds for the corporation's blast furnaces in Sault Ste. Marie.

The underground ore body is a siderite ore and it contains 3.8 per cent sulphur. During the sintering process, in which, incidentally, you burn the ore with fuel and convert it from iron carbonate to iron oxides, sulphur dioxide is exhausted to the atmosphere. The sulphur dioxide fumes at Wawa are about one per cent of the gas stream which is low by comparison with other people who have the problem.

Because of the effect of Lake Superior and the prevailing winds, most of the sulphur dioxide discharged goes into an uninhabited valley running north and east of our emission and it results in a local effect. For the past 25 years Algoma has been aware of the sulphur dioxide damage, which was a vegetation damage at that time, and has kept the damage confined to this valley.

In 1961, we entered a voluntary agreement where we would limit the emissions to 4,200 tonnes a week in summer and 6,000 tonnes a week in winter. We did this by selective mining of the sulphur ores. In 1971, these limits were incorporated into our first control order. At that time, we were also required to carry out research into methods of sulphur elimination.

In 1973, we reported to the minister that there was no economic method of removing sulphur dioxide and at that time we were required to engineer and build a tall stack to meet these guidelines by dispersion. That was the technology of the day and that was about the time the Inco stack was built. However, by 1974 we had done some local weather studies and we had reported that a 1,400-foot stack would be required. At that time, the minister withdrew this requirement because it was the first sign that tall stacks were not the answer.

As I said, as part of our work in 1974, we employed a weather consultant and got an understanding of the local weather. From 1976, we operated a system based on the local weather. In 1978, the Ministry of the Environment approved a control system based on weather forecasting that we continue to operate. This system has sulphur dioxide monitors in the town of Wawa and at the far end of sulphur burn at a place called Goudreau. This is to make sure that the sulphur dioxide fumes do not go into the town. What happens is we get a weather forecast and if the wind is going to blow towards the town, we stop production. This happens about 10 per cent of the time.

Therefore, we have a program and the people of Wawa are protected against exposure to sulphur dioxide. We have a workable program. There have been minor exceedences of the 0.5 limit--it is the provincial criterion--and there have been a total of four charges laid in the past 12 years.

In 1980, in response to an increasing awareness of acid rain, Algoma commissioned a study to determine our contribution. Dr. Weisman of MEP, Meteorological and Environmental Planning Ltd. which incidentally is our

weather forecaster, conducted the study and concluded--we quote Dr. Weisman--"The Algoma Ore emissions produce a locally observable effect on SO₂ concentrations and dry depositions of sulphur compounds." In addition, he found, "The contribution to sulphate and acidic component in precipitation from Algoma Ore emissions is small by comparison to measured ambient levels and is negligible for ecologically sensitive areas in central Ontario." By reading that you can see that Dr. Weisman has a PhD, but he basically said that we have a local effect and there is vegetation damage, but because of the shortness of the stack and the local weather we do not do very much outside our own sphere of influence.

Also in 1980, Algoma received a request from the minister to determine the cost of reducing the SO₂ emissions by 50 per cent and 100 per cent. You probably know that this was sent to every industry in Ontario. Algoma undertook a worldwide study of suitable SO₂ removal systems. The results of this indicated that the cost of construction and operation would make Algoma Ore nonviable at either level. As part of this study, we did a study of the social and economic impact. The closing of Algoma Ore would in turn have a devastating effect on the communities of Wawa, Hawk Junction, Sault Ste. Marie and on the Algoma Central Railway.

Because the method of conventional SO₂ removal was out, pilot plant processes were tested during 1984 and 1985 to remove sulphur from the ore before sintering. It was to be used in conjunction with increased low sulphur iron oxides to meet the limits. However, again the capital and operating costs were found to be prohibitive at Wawa.

In 1985, the minister announced Countdown Acid Rain that required Algoma to reduce emissions to 125,000 metric tonnes by 1994. This is less than the previous limit allowed us under the 6,000 and 4,200 tonnes a week; less than half.

At the same time, during the past five years, a severe decline in business has had a traumatic effect on the iron and steel industry in Canada and the United States. This decline has been brought about as a direct result of reduced iron and steel demand, with competition from low-cost North American and offshore sources of iron ore. This has resulted in mines closing--the Griffith mine in Bruce Lake was the latest casualty--and the remaining mines operating at much below capacity. These same forces have produced an abundance of low-cost iron ore on the open market. From 1981 to 1986, the actual price of iron ore went down about 40 per cent.

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Almost a year ago today, Algoma announced a number of actions, including a pronounced down-sizing of the corporation that limits the steelworks' output to 2.5 million tonnes of raw steel. Our previous capacity was close to four million tonnes of raw steel. These actions were seen to be necessary for the company to return to profitability and were a direct result of this international pressure on the iron and steel industry. Among the actions necessary was a requirement to reduce the volume and cost of raw materials.

As a result of the down-sizing, Algoma requires only 2.8 million tonnes of iron ore, although it owns 4.2 million tonnes. We own it in two places: 1.8 million tonnes in Algoma Ore division and in a 30 per cent ownership of the Tilden iron ore mining company located at Marquette, Michigan, which is the balance.

In order to reduce this level and get down to Algoma's new requirements, production alternatives were studied, from running at capacity to a complete shutdown. In May 1986, it was announced there were really only two options for Algoma ore: reduce from two million to 900,000 and become viable or begin an orderly shutdown.

This solution to the problem had to meet the following criteria: We wanted to keep Algoma Ore running to give the town of Wawa an economic base. We had to make Algoma sinter competitive with these alternate sources, and I have indicated that the prices had gone down about 40 per cent in the five years. We wanted to keep Algoma's iron ore supplies in balance, because you cannot eat it. We wanted to meet the environmental regulations of the Ontario government, the 125,000 tonnes a year by 1994, and we wanted to meet Algoma Steel's metallurgical requirements. What I am saying is that Algoma sinter contained some impurities, principally manganese and magnesium oxide, that precluded us from increasing to the two million tonnes a year.

After examining all the alternatives, we concluded that the 900,000 tonnes a year, or roughly half of what we produced previously, would best meet the above criteria. We had worked with all levels of government and our own employees to maintain a viable operation at Wawa and an economic foundation for our area.

The Ontario government's response to our second progress report stated, "The technical committee found the requirements of regulation 663/85 have been met with respect to the company's second progress report." The report also noted, "If economic conditions change and the company wishes to increase its production at Wawa again, utilizing any ore containing sulphur, technical reduction methods or procedures such as those previously examined would have to be in place before production could increase to a level which would, in the existing facility, result in a violation."

From the graph we have appended at the end, you will notice how our sulphur dioxide emissions have gone down progressively since 1973. On the left-hand side of the graph, we have the regulation by 1994, which we have in fact been in compliance with. We were right on the line in 1984 and we have been in compliance with it since 1980, principally because of our dropping production, which is a result of this international iron and steel situation.

This concludes a précis of our brief.

The Vice-Chairman: It is not the direction in which we would really like to see you go, cutting back production to control emissions. That is not very encouraging. I suppose the markets have had a role to play as far as the sale of your products is concerned. Has it been steadily dropping, or can you foresee an improvement in sales? I do not think that to cut back, to control emissions to meet the standards is good for the economy of Ontario. It is certainly not the direction I would like to see.

Mr. Jennings: It is difficult, but the part of the problem that I did not dwell on is that it is an underground iron ore mine and our final product contains 48 per cent iron. All our competitors are open-pit mines at about 65 per cent iron. We are fighting with one hand tied behind our back, apart from that.

Mr. Paterson: On the general business, there is a world surplus of steel capacity. To maintain operations in an environment like that, we have had to down-size our plant and make it the most economically viable facility

that we can. We dislike the solution to this problem equally as much, by down-sizing, but under conditions that exist today there is no choice and we are committed to that. The results of the initial part of that program became apparent yesterday at our annual meeting where, for the first time in five years, we made a small profit. I have to emphasize the word "small" because it was not an acceptable profit, but it was at least black.

The Vice-Chairman: We have some questions from the members. Do you have any costs of putting on the recovery process to meet the standards? Do you have a breakdown on those costs for the committee?

Mr. Jennings: Yes, sir. We did not bring the specific costs with us, I do not think, but it was \$175 million to take 100 per cent of the sulphur out in 1980.

Mr. Craig: It was \$125 million in 1980.

The Vice-Chairman: In 1980 dollars?

Mr. Craig: That was the capital cost of a sulphur scrubber, a conventional sulphur removal system at Algoma Ore. Operating costs were over and above that, and they would be \$20 million in 1980-81 dollars.

Mr. Paterson: That is \$20 million a year.

The Vice-Chairman: But that updated your overall plant? When you put that in place, does that modernize other parts of your plant also?

Mr. Craig: No, that was strictly a scrubber to remove sulphur dioxide. You may be confusing two systems that we are talking about here. One is the conventional scrubbing system, which would cost \$125 million. The other is the flotation system which was piloted, and the cost of that was about \$25 million. That is the one we referred to on page 4 of the brief, at the top.

The Vice-Chairman: When the committee had a look at Inco, when it put its tall stack up, there was a tremendous expense to that. There has not been too much evidence that it really reduced the company's overall output of sulphur dioxide. But they also did quite a bit of improvement in their overall facility, which was tied to the cost. I guess that was the reason for the question, if you put in improvements, will that improve your plant efficiency?

Mr. Jennings: No.

Mr. Wildman: I noticed in this morning's Globe and Mail, in the Report on Business, the report of your annual meeting yesterday. I think the last paragraph is significant. Mr. Macnamara is quoted as saying, "We've made it quite clear that as long as its ore is competitive...we will continue to operate' the Algoma Ore division at Wawa, Ontario, a town that has been threatened by the possibility of Algoma closing the iron ore mine."

I would like you to elaborate a little on the phrase "as long as its ore is competitive." From what you have said this morning and from what I know about our discussions on previous occasions, I do not think it is competitive. If you were to buy on the spot market, you could buy Labrador ore. It could be delivered to Sault Ste. Marie, I understand, for something like \$68 a tonne, whereas delivered ore from Wawa is \$92 a tonne. Is that not correct?

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Mr. Jennings: The ore from Wawa was \$92 a tonne. I think we reviewed with you a survival plan, or a plan of action, for Algoma sinter. As Mr. Wildman says, the competing ores are in the high \$60 range. One of the elements of this plan of action was the freight rates.

Because Algoma sinter was the major customer of the Algoma Central Railway and the freight rates were not competitive with what other people were doing, an agreement was reached between the government of Ontario and the Algoma Central Railway where interim financing was arranged. This allowed us to lower our freight rate. This, incidentally, is probably what contributed to Algoma's profit. The cost of raw material came down in the first quarter because of these freight rates and other things.

Mr. Wildman: So the agreement between the federal and provincial governments and the Algoma Central Railway with regard to assistance for that operation translates into lower freight rates for you.

Mr. Jennings: Yes, sir. At that point and at this time, we are nearly competitive.

Mr. Wildman: I see. I asked at the beginning whether Mr. Jennings and his colleagues could clarify for the committee the direct or indirect relationship between the cutback in production and the control order for 1994. I think you have done that but, to be clear, the 900,000-tonne level of production is an economic decision by the company; it is not directly related to the control order. Is that not correct?

Mr. Jennings: That is quite true. It happened that the economic recession of 1982, Algoma's subsequent plan of action in the down-sizing and some metallurgical requirements on the product from Algoma Ore at Wawa led us to the 900,000-tonne level. It happens, coincidentally, that we were then able to meet the emission limit.

Mr. Wildman: But it was a coincidence?

Mr. Jennings: It was a coincidence.

Mr. Wildman: A happy coincidence.

Mr. Jennings: Exactly a happy coincidence, because we do not feel we have very much capital money to collect sulphur emissions at Wawa.

Mr. Wildman: You commented that the cost of the conventional scrubber technology that was looked at in 1980 was \$125 million. You also received assistance from the federal government to test the flotation process, did you not?

Mr. Craig: Yes, that is right.

Mr. Wildman: How much assistance did you receive from the federal government?

Mr. Craig: It was \$140,000.

Mr. Wildman: That found that there would be about \$25 million in capital cost for that kind of process.

Mr. Craig: Yes, that is roughly the cost.

Mr. Wildman: You made it clear that at \$125 million you believed Algoma Ore division would not be viable. Is that also true at \$25 million?

Mr. Craig: The thing you have to start with when you look at that particular process is that the process does not get us anywhere near the 125,000 tonnes of sulphur dioxide. As to whether \$25 million makes us a nonviable operation, I am not sure.

Mr. Wildman: Where does it get you in terms of the emissions?

Mr. Paterson: Perhaps I could throw some light on that. The flotation process can handle only some 20 per cent of the capacity. You cannot replace it all because of the metallurgical requirements, so because of the viability, you cannot operate it much beyond this capacity. The 900,000 tonnes, in effect, is about 25 per cent below the level of SO₂, which is the limit set in 1994, so there is the possibility of increasing a little bit without exceeding that. The 900,000 tonnes and the 125,000 tonnes of SO₂ were not related, only in that one was lower than the other.

Mr. Wildman: I am not sure I quite understand. You have indicated that you are 25 per cent below the 1994 order, so you could have a slight increase in production and still meet that order. But in terms of the flotation process, you said you could only deal with 20 per cent of the production? I am not sure I understand that.

Mr. Jennings: To liberate the sulphur from the ore in the flotation process, you have to grind that portion of the ore, and because the sintering process depends on porosity or the ability to pull wind through it, you then cannot grind up 100 per cent of the ore and still make sinter, because you will not pull the wind through it.

Mr. Wildman: So you can treat only 20 per cent?

Mr. Jennings: Yes, sir.

Mr. Wildman: What effect would that have on your overall production?

Mr. Jennings: That process was about 90 per cent efficient, so 90 per cent times 20 per cent is about 18 per cent of the total emissions, which, at our current level, would probably be 18,000 tonnes of SO₂ a year.

Mr. Wildman: So you would be treating only a small amount?

Mr. Jennings: And you gain only that much SO₂ for \$25 million.

Mr. Wildman: Currently, how much have you cut back in your production at Tilden?

Mr. Jennings: The operation at Tilden is in about the same ratio as Algoma Ore. That plant has a capacity of eight million tonnes a year, and we are currently operating at four million tonnes a year.

Mrs. Grier: I confess to not being as familiar with Algoma as my

colleagues, but I have to tell you, in the two years I have been here, I do not think I have heard any company more frequently talked about than what Mr. Wildman and Mr. Morin-Strom do, so I feel as though I ought to know more.

The forecast you have for production to 1994: What do you see? How does it compare with the 900,000 tonnes you are now producing?

Mr. Jennings: We expect to continue operating between 900,000 and one million tonnes a year for the foreseeable future.

Mrs. Grier: No matter what happens to markets?

Mr. Jennings: Yes.

Mrs. Grier: Is that because of the nature of the ore in this location?

Mr. Jennings: It is in part because of the metallurgical nature of the ore and in part because of the permanent down-sizing of the facility at Sault Ste. Marie.

Mrs. Grier: That is a permanent down-sizing?

Mr. Jennings: That is intended to be a permanent down-sizing.

Mr. Wildman: Your position is that the company will survive as a smaller company.

Mr. Jennings: Yes.

Mrs. Grier: What would have to happen for that situation to change?

Mr. Jennings: Our company would have to build additional steelmaking facilities at Sault Ste. Marie and continue its casting facilities, I guess. Is that right?

Mr. Paterson: The down-sizing in the steelworks at Sault Ste. Marie limits the ore requirements, and without increasing the plant at Sault Ste. Marie, there is no point in increasing the ore output. In the present and the foreseeable future, increasing the steelworks in Sault Ste. Marie does not look as if it is a requirement.

In the down-sizing, what we have done is to take the least viable operations and do away with them and replace them, to some degree, with a more economical, modern, continuous-casting process. Of course, that has a limit, and the limit is what we are talking about here: well below the 900,000-tonnes limit in Wawa.

Mrs. Grier: Is the Sault your only steelworks?

Mr. Jennings: Yes. All our steelmaking facilities are located in Sault Ste. Marie.

Mrs. Grier: If conditions were to change and you were to decide to reverse the decisions you have taken on down-sizing and to do something different at the Sault, how long a lead time would it require for you to change direction?

Mr. Jennings: I would say three to five years.

Mrs. Grier: I am sure you appreciate that the concern of this committee is whether there needs to be a contingency plan should you begin to increase production.

Mr. Jennings: I would say not, because the facilities we will do away with in Sault Ste. Marie will be destroyed, in effect. They will not be capable of running next week, once we turn them off.

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Mrs. Grier: I see. Should you be required to put in place technology to reduce your acid gas emissions, given what you have said about the flotation, is it fair to assume that you would need both flotation and scrubbers? Is yours the situation where you cannot avoid putting in scrubbers because of the nature of the ore and the sintering that you described?

Mr. Paterson: I think the magnitude of the operating costs and the capital costs are such that one could not even consider that.

Mrs. Grier: Is there any other technological way of abating your emissions?

Mr. Paterson: I am afraid there is not. That was part of the search we did worldwide to see if there was something with which we were unfamiliar. Technically, there is just not anything to accomplish that.

Mr. Wildman: The Japanese offered to build you a whole new plant, did they not?

Mr. Paterson: I am not sure even the Japanese can use the Wawa centre under those conditions.

Mr. Wildman: No. I did not mean that.

Mrs. Grier: Is there any other location that has the same kind of ore as you have? What is happening in other places where this situation exists?

Mr. Jennings: The only other siderite ore body that I know of is in Spain, and I do not believe the ore body contains sulphur. It is not a common ore body.

Mr. Charlton: I have one question to follow up on the line of questioning that was just pursued. You did the study on scrubbing in 1980 and found it to be uneconomical. What would the price of ore have to reach to make it economical? What was the range of problems in terms of the economics?

Mr. Craig: I think that the cost of the scrubbing at that time was so much greater than we thought the ore division could handle that we did not even consider what the price would have to reach. It was just so much beyond us.

Mr. Jennings: It was 50 per cent of the operating cost at that time.

Mr. Charlton: The \$20-million annual operating costs of the scrubbers was 50 per cent of the total operating costs?

Mr. Jennings: Yes, sir.

Mr. Wildman: My understanding is that you still have the capacity at Algoma Ore to produce what you produced in 1980 with half the work force. Is that correct?

Mr. Jennings: The sintering machines are still there. As time goes by, we have plans to put links in that will not allow us to continue. Part of our plan of action was that Algoma would spend some capital to improve productivity. Once that link is in, we will no longer have the capacity of 1.8 million. You are familiar with the plant. Taking out the hot screening and putting a pan conveyor directly to the cooler then cuts out that capacity permanently.

Mr. Wildman: I see. When do you anticipate doing that?

Mr. Jennings: The engineering studies are under way right now.

Mr. Wildman: But at present, with half the work force, you could produce the same amount you produced in 1980, if you so wished.

Mr. Jennings: We could start all six sintering machines tomorrow with a few more people, that is true.

Mr. Wildman: So basically, you have had a tremendous increase in productivity at that operation over the last seven years?

Mr. Jennings: Yes. It is partly because of a capital investment in the mine. I might say that we are probably the most productive mine in the world that we know of, and it is because everybody has gone along on this survival plan. There is no doubt about it that we have fewer people than we used to have.

Mr. Wildman: That is right.

Mr. Jennings: I was not replaced.

Mr. Wildman: If it is the case that you have this tremendous increase in productivity, obviously that must have had some effect on the cost of ore per tonne and the viability of the operation.

Mr. Jennings: It did but unfortunately, as I said before, the international price of iron ore dropped 40 per cent in the same period. So everybody works like crazy and you just barely keep up or lose a little ground.

Mr. Wildman: Algoma Steel does not purchase ore on the spot market, though, does it?

Mr. Jennings: No.

Mr. Wildman: And you do not have any intentions to do so.

Mr. Jennings: No.

Mr. Wildman: So all your sources of raw material are captive.

Mr. Jennings: Yes.

Mr. Wildman: Is it not a bit of an academic argument to say, "If we

were to buy on the spot market, we could obtain ore delivered at Sault Ste. Marie for such and such a figure," if you have no intentions of doing so?

Mr. Jennings: It is a goal that we should attempt to buy ore for the same price as our competitors, because then we are producing steel for the same price. If we are not able to get the cost at Algoma Ore to be economically viable, then ultimately Algoma Ore will close. This is what we are all fighting to avoid.

Mr. Wildman: At the present time, what is the cost per tonne of ore from Tilden?

Mr. Jennings: It is almost the same as Algoma Ore at the present time.

Mr. Wildman: That is partly because of debt load; right?

Mr. Jennings: Yes. There is a high fixed debt load.

Mr. Wildman: As that is paid down, you anticipate that the cost of that ore will drop.

Mr. Jennings: They probably have more upscale potential. The other point to think about Tilden is that we produce it in American dollars, and at the moment there is an advantage there. If the two currencies go together, it would put tremendous pressure on our other source.

Mr. Wildman: Fine. Thank you.

Mr. Haggerty: I was interested in the comments by Mr. Wildman, but I suppose we are dealing with economics and practically world economics. My colleague Mr. Partington and I were down to Washington, DC, just in the past week or so on the matter of free trade. The issue came up about the problems of the steel industry in the United States and how it relates to the steel industry in Ontario. There are difficulties in this particular area. One of the things we found out was that there is dumping, you might say--it may not be dumping; it is low-priced steel coming into Canada and even into the US from the developing countries. This is where the problem is.

I understand Stelco in Hamilton has improved its technology and increased the productivity, you might say, of the output of the industry itself, and you have done that in Sault Ste. Marie. So there is the economics of competing on a world basis in steel. It is a serious problem.

The other matter I want to question you on is that in your opening comments, on page 1, you mention the sintering process. What fuel do you use besides the ore? Are you using coal, coke or oil?

Mr. Jennings: We mix the ore with coke, which can be blast furnace coke or petroleum coke, and we light the top with bunker C oil, because there is not a gas pipeline there.

Mr. Haggerty: Is the coke that you burn low-sulphur?

Mr. Jennings: Yes. It is a byproduct of our metallurgical process in the steelworks. The sulphur in the coal--and it is low-sulphur--is captured at the steelworks, where it is converted into coke oven gas and byproducts.

Mr. Haggerty: So you are not purchasing coke from the US. You are making that right at the site in Sault Ste. Marie, are you?

Mr. Jennings: Most of the time. Sometimes we purchase metallurgical coke on the spot market, which is more or less a trade, and we sell our own coke to the same people we purchase it from.

Mr. Haggerty: So you manufacture the coke then.

Mr. Jennings: Yes.

Mr. Haggerty: Have you considered a sulphur recovery plant in your operations in either place?

Mr. Jennings: Each time we looked at sulphur recovery at the ore division, it was not economical.

Mr. Haggerty: There is no market?

Mr. Jennings: No.

Mr. Haggerty: There is nobody interested in the area of fertilizer or anything like that?

Mr. Jennings: I just briefly touched on it. Our gas stream contains one per cent SO_2 , and most of the fertilizer and the sulphuric acid plants are interested in going beside plants like the Noranda or Inco smelters, which have richer or higher SO_2 streams.

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Mr. Haggerty: So you do have lower SO_2 in your operations compared to Inco's then. Is this what you are telling me?

Mr. Jennings: Yes. We have a more dilute gas. I think we are at one per cent and they are probably three per cent.

Mr. Haggerty: So you say it is not viable to get into the area of a sulphur recovery plant.

Mr. Jennings: No. We have not found a way to do it.

Mr. Haggerty: That is all.

Mrs. Grier: Looking at the ministry's response to your first progress report, there is reference to a request that you clarify the possible use of mill scale as a means of reducing SO_2 . Is that the flotation process you mentioned?

Mr. Jennings: No.

Mrs. Grier: What is that about?

Mr. Jennings: During the steel rolling process, little chips fall off as the mills roll the steel; they are what is called mill scale. They are small flecks of steel that are high in iron and contain no sulphur. We were able to improve the iron content of the Algoma sinter and reduce the emissions by dilution for the amount of this material we are able to acquire.

Mrs. Grier: I see. I guess I have not got the response to your second progress report. Did you in fact clarify that for the ministry as they requested?

Mr. Jennings: Yes.

Mr. Craig: Yes, we did.

Mr. Paterson: There is an excerpt in the brief which says that in the ministry's view, we have met the requirements, and cautions against increasing beyond that level in the future. Scrubbers and control devices would have to be put on. We think we have answered that by saying the down-sizing of the steelworks takes care of that, because the requirement disappears.

Mrs. Grier: Just so I am clear on the whole corporate structure, as I think about what you have told us, essentially you are going to be there as a small operation for the foreseeable future if you continue at least marginally in the black. The reason you are able to continue to be there is the transportation that is provided by the Algoma Central Railway and the federal subsidy on that.

Mr. Jennings: And the excellent productivity out of the mine. At the mine, we are almost competitive with world standards.

Mrs. Grier: Is there any likelihood of that federal and provincial subsidy to the railway changing or being withdrawn? What is its status?

Mr. Jennings: I believe it is a five-year agreement.

Mrs. Grier: If we get into a free trade agreement, what does that do to that?

Mr. Jennings: I do not think it has anything to do with it, because it is between the railway and the two levels of government, and it is to maintain this tour train.

Mrs. Grier: It is not to subsidize Algoma Steel?

Mr. Jennings: No. We looked at the alternatives, including, if you can imagine, running trucks up and down the highway, which nobody really wants to do, and the rail rate we have negotiated is close to alternatives.

Mrs. Grier: Thank you.

Mr. Haggerty: Just to follow up on the matter of the economics of the steel industry. Has your industry done any studies in the area of the replaceable products that are out there now to replace steel such as in the area of plastics? Have you had any impact studies in this particular area as to what the cost would be related to the down-sizing or the loss of sales, say, even to the automobile industry?

Mr. Paterson: Our steelworks are aimed basically at the capital markets, construction and heavy capital projects, rather than consumer projects. Consequently, we have not and do not really make products that fit in that category. Our products are used basically in the transportation industry, the oil and gas industry, the construction industry, shipbuilding, railroad car building and that kind of thing. We are very much towards the heavy capital end of the market; that is the one that has suffered more than other places which are heavily involved in the automotive market, for example.

Mr. Haggerty: Even in the construction area, though, if you look at the buildings that are being built in downtown Toronto, it is not really steel

that is used; it is reinforced steel with cement. It is not the old I-beams and structural steel, you might say; it is channels and so on.

Mr. Wildman: It is called steel intensity, and it is going down in our economy.

Mr. Paterson: That is right. That is an unfortunate fact.

Mr. Haggerty: In the other steel industries, has nobody made a study of the impact of plastics now being used in automobiles where normally it was steel?

Mr. Paterson: Oh yes, there have been many studies made on that, I am sure. I just say that in our particular company we are not heavily influenced by that.

Mr. Haggerty: The impact of aluminum cans would have some bearing upon the steel industry, maybe not so much in Sault Ste. Marie, but in--

Mr. Paterson: That is right.

Mr. Wildman: But the impact of concrete and cement in construction does have some direct impact on it.

Mr. Paterson: Yes, it does.

Mr. Haggerty: I was just looking for numbers in that area to find out. As we change from one product to another, we create another environmental problem with plastics, and often we forget that.

Mr. Partington: I have a couple of questions. With respect to exports to the United States, we have heard that Ontario's share has increased about 5.7 per cent. Would your mill share in that growth of exports?

Mr. Paterson: At the present time, there is a controversy over what those numbers really mean and how much of it is steel that has just passed through into the United States and has not originated in Canadian steel mills but bears a Canadian stamp. It is a much lesser number than that number.

Mr. Partington: If a freer trade arrangement were negotiated where our steel, for example, could enter the United States at competitive rates, would you not share in some of that growth?

Mr. Paterson: Yes, we would benefit from that, and a free trade association would benefit us. We have one of the foremost, world-class tube mills sitting looking for orders at the moment.

Mr. Partington: Would that not be an argument that would counter your statement that the optimum size of your mill must be reduced to production at a level you indicated?

Mr. Paterson: If the requirement to expand came, it would not be going back to what we had; it would be expanding in a more modern manner, which would take considerable time to achieve, the three- to five-year time that I mentioned before.

Mr. Partington: My final question, I guess: It seems to me a little coincidental that your decision to down-size came after the Countdown Acid Rain announcement. Was there any relationship at all with that?

Mr. Paterson: None. The down-sizing was a matter of survival at the steelworks.

Mr. Wildman: This is a little bit off the topic at hand, but I was recently in Hornepayne and Oba, in the north end of Algoma riding, talking to a lot of rail employees. In the Globe and Mail report of your annual meeting yesterday, I noticed Dr. Macnamara made a number of criticisms of the relationship between the federal government and Sydney Steel Corp. We have heard all of the controversy over the rail production and CN orders of rail, but one of the section crew employees at Oba asked me, "What is all this big argument between Algoma Steel and Sysco about rail orders when we are laying Japanese rails here?" What is the argument? Why are we laying Japanese rails?

Mr. Paterson: I could only speculate. The Japanese at the moment are producing a head-hardened rail of a quality made by neither Stelco nor ourselves. We have announced that we are embarking on the process of making a rail of such higher quality. It is not yet complete, but it is a rail that lasts longer. Consequently, the railroads are interested in this kind of rail for severe service. We have done some experiments. We have maybe 300 to 500 tonnes of experimental rails in service at the moment.

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Mr. Wildman: I am not certain of the figure; I think it is something like 17 per cent penetration in rail imports into Canada. Is that correct?

Mr. Paterson: I could not be sure of the number.

Mr. Wildman: Anyway, if you were able to make a competitive, durable rail to the Japanese, were able to resolve the concerns you have about the Sydney Steel Corp.'s share of the rail market and were to have a significant increase in your market for the rails you produce, would that in any way change your plans for Algoma Ore division and the need for more raw material, if you were able to step up the amount of rail produced?

Mr. Paterson: No. Our rail is, at the very best, less than 10 per cent of the total output, so an increase of three or four per cent would not change that.

Mr. Wildman: I see. How much of your total production is exported into the United States market today? Not just rail; I am talking about all your products.

Mr. Paterson: That varies from time to time. We were in the 25 per cent area. The oil industry took a lot of seamless tubes that we produce, and it is pretty flat. We are much less than that now. I could not give you a figure, but it might be in the 15 per cent area.

Mr. Wildman: On the comment you made earlier with regard to free trade, is your support for that concept based on a desire to increase your share of the US market or to protect what you had or now have?

Mr. Paterson: It is a difficult question for me to answer. I have my mind tuned to the environment rather than to commercial effects.

Mr. Wildman: It relates to the environment, because this committee is most concerned--I am concerned with both--with the environmental aspects. What you have done in order to meet the standard for 1994 is cut your production. You have not done it through engineering controls. What the

committee is concerned about is that, since your cut in production is based on markets, not on the environment, if markets do in fact change in the future, then would your commitment to meeting the 1994 control also change? They are related. Because you are meeting the control order on the basis of economics, if economics change, then what happens to your meeting the control order?

Mr. Paterson: I think there is a problem of metallurgy, a technical problem, that only so much Algoma ore can be used because of the characteristics of the ore. One can go up a considerable amount and still be under the requirements for the SO₂. To do that, the steel works go away up. That cannot be accomplished after the down-sizing.

Mr. Wildman: So you have two things. One, because of metallurgy, you are not going to be able to use significantly more.

Mr. Paterson: That is right.

Mr. Wildman: Also, because of the down-sizing, without a considerable capital investment you would not be able to increase your production.

Mr. Paterson: That is right.

Mr. Chairman, if I might, I would just like to correct a thought that we down-sized to meet the SO₂ requirements. That was not true. The down-sizing was survival of the company and it happened to coincide with and solve the other problem.

Mr. Haggerty: I did not want to take any more time of the committee, but I was interested in Mr. Wildman's question to the panel this morning and I was trying to relate to the connection of Algoma Steel. I guess it is part of Canadian Pacific, is it? Am I correct in that?

Mr. Wildman: Correct.

Mr. Haggerty: That is right. You have the federal government coming up with a program that says to buy Canadian, and it is rather difficult to follow that trend in buying rail steel from offshore when we do have--

Mr. Wildman: CP does get all its rail from Algoma Steel, does it not; or most of it?

Mr. Paterson: Most of it.

Mr. Wildman: Hence the question of CN. Where is CN going to get its rails?

Mr. Haggerty: I am a little bit alarmed that we have a government of the day that preaches buy Canadian and then goes out and buys it offshore.

I have some further questions, I guess technical questions. I am thinking about the wheels on these diesel engines or the engines themselves, which are harder steel, and if I interpret what Mr. Wildman was saying, they are bringing in some type of a ribbon steel of higher quality, perhaps of harder steel. With the climatic conditions here, the cold winters in the north could almost snap some of those if you get too brittle a steel.

In the area of safety again, when you get two of the metals together, both of the same hardened surface, it will take them about four miles to stop one of those trains in full motion if they ever have to brake.

Mr. Paterson: There are extensive tests being done on all those things that you mention. That is one of the reasons we are not producing this rail right at this time. We have been in the process of studying and producing test rails and so forth. It will come about; no question.

Mr. Haggerty: But here we are laying down track now without any safety studies on this. It could be of serious consequence in a derailment where they may be carrying sulphuric acid or any other chemical. There may be an environmental problem with it later on.

Mr. Paterson: I do not think the problems you suggest are real.

Mr. Haggerty: We are not sure, though, are we?

Mr. Paterson: Yes, I think that has been determined, and the rail is designed specifically for those things. This so-called super-rail is used only in certain areas where there are conditions to justify it.

Mrs. Grier: Can I have one further question? The response to Mr. Wildman raised another question in my mind. Which came first: the acid rain regulation or the decision to down-size?

Mr. Jennings: The acid rain regulation, and then we were trying to figure out how to do it.

Mr. Paterson: Our down-sizing was announced almost a year ago, at the annual meeting last year, which was on the 13th.

The Vice-Chairman: Are there any further questions? If not, I think Mr. Wildman made the point that the mandate of this committee is to look at acid rain. We are to recommend to the Legislature how we can assist in reducing it. Acid rain, of course, knows no boundary and we are dealing with our friends to the south in trying to come up with a policy and the protection of our environment.

We realize you presented your position this morning as far as Algoma Steel is concerned, and the economic difficulty. It is going to give us some tools to work with on making recommendations on how we can improve it, and we appreciate your coming down this morning to do that. We hope the economy turns around somewhat so that it looks a little brighter and gives you dollars to work with.

I indicated before the committee met that the agricultural industry is in a lot of difficulty. It certainly uses a lot of steel. I think the economy generally is quite tough in some areas. The building trade area is good. So it is a dilemma. Thanks very much for coming down. We appreciate it.

Before the members start leaving, can we perhaps go in camera this morning and start to put some of our things into perspective?

Mrs. Grier: I think the Canadian Coalition on Acid Rain has a fairly significant presentation to make to us this afternoon and we might want to hear that before we go in camera.

Mrs. Marland: No question.

The Vice-Chairman: I agree with that, but we can maybe deal with it until 12 o'clock. It depends. We would need the agreement of the committee.

Mrs. Grier: I would be reluctant to do that, knowing that the coalition is coming back at its request to answer some of the things that have been said in the other testimony. I think its concern and direction to us would be something we would want to take into consideration before making a decision.

The Vice-Chairman: Could we have Mr. Neufeld speak to that?

Mr. Neufeld: I would be happy to. Essentially, what I see us doing is beginning to review the mass of material we have heard to date. I anticipate we would need to spend some time this afternoon as well. There is so much material that I thought it might be wise to get a head start on it.

Mr. Partington: We have not yet heard all the public hearings, and going in camera to review what we have heard before we finish is to some extent starting along the line of decision-making before we have had complete input. It is a question of having 40 or 50 minutes of presentation. If there is any danger of the suggestion that we started to form opinions before completing the process, then I think we should delay it.

Mrs. Marland: How many people are going to be here and for how long this afternoon? Maybe we should establish that. I am easy both ways, but it was just a matter of there being something we could do with the balance of this morning that would shorten this afternoon. I do not see that we are going to get through everything between three o'clock and four o'clock this afternoon.

Mr. Partington: I do not think we expected to. I believe we are requesting two further sittings after the Legislature reconvenes.

Mrs. Marland: Those are the dates we discussed yesterday. That is fine. I am easy either way.

Mrs. Grier: It might be helpful to know how many people we are going to have this afternoon. We will both be here. I do not know what the other contingents are.

Mr. Partington: I will be here at three o'clock.

Mrs. Marland: I will be here at two o'clock and at three as well.

Mrs. Grier: It would be nice to have a full committee at three o'clock.

Mr. D. W. Smith: I will be here until at least 3:15.

The Vice-Chairman: Then you have to leave?

Mr. Partington: Mr. Eves is going to be here.

The Vice-Chairman: Okay. If everybody is agreed, we will meet this afternoon at two o'clock to hear the final presentation.

The committee recessed at 11:13 a.m.

SELECT COMMITTEE ON THE ENVIRONMENT

ACID RAIN

THURSDAY, APRIL 16, 1987

Afternoon Sitting



SELECT COMMITTEE ON THE ENVIRONMENT

CHAIRMAN: Knight, D. S. (Halton-Burlington L)
VICE-CHAIRMAN: Miller, G. I. (Haldimand-Norfolk L)
Charlton, B. A. (Hamilton Mountain NDP)
Eves, E. L. (Parry Sound PC)
Fish, S. A. (St. George PC)
Grier, R. A. (Lakeshore NDP)
Henderson, D. J. (Humber L)
Marland, M. (Mississauga South PC)
Partington, P. (Brock PC)
Poirier, J. (Prescott-Russell L)
South, L. (Frontenac-Addington L)

Substitutions:

Haggerty, R. (Erie L) for Mr. Poirier
Smith, D. W. (Lambton L) for Mr. Henderson
Wiseman, D. J. (Lanark PC) for Ms. Fish

Clerk: Manikel, T.

Staff:

Neufeld, D., Research Officer, Legislative Research Service

Witnesses:

From the Canadian Coalition on Acid Rain:
Perley, M., Executive Co-ordinator
Hurley, A., Executive Co-ordinator

LEGISLATIVE ASSEMBLY OF ONTARIO
SELECT COMMITTEE ON THE ENVIRONMENT

Thursday, April 16, 1987

The committee resumed at 2:11 p.m. in room 230.

ACID RAIN
(continued)

The Vice-Chairman: Members of the committee, I believe I almost see a quorum. I think we will proceed.

We have with us this afternoon Mr. Michael Perley, executive co-ordinator of the Canadian Coalition on Acid Rain, along with Ms. Adele Hurley, executive co-ordinator. Welcome to the committee this afternoon and we look forward to your presentation.

THE CANADIAN COALITION ON ACID RAIN

Mr. Perley: Thank you, Mr. Chairman, and members of the committee. We are very pleased to be here once again. We have followed your work with great interest, of course, and we would like to take this final opportunity to review some of the concerns that we have expressed to you previously and to add some additional material that we hope will be helpful to you in your deliberations.

As we said in our initial presentation, we do support the goals of Countdown Acid Rain, and we congratulate the government for taking the step that it did. Countdown is a major step in the right direction.

Having said that, we do have some concerns about the program, three in number: we not not want the program's target emission levels to be weakened at any point in the future. We have recommended, and will reiterate, some steps which we hope will avoid that possibility; we want the program to be enforced, as I am sure you all do; and we believe that the banking provision in the Ontario Hydro regulation is unacceptable.

We make the following proposals to address these concerns. A legislative committee hearing should be held before any amendment to the regulations is allowed. The second point is that full public scrutiny of the implementation and enforcement of the regulation should take place through public hearings on the abatement plans of the four corporations, independent public monitoring of emissions and public hearings on any nonenforcement situations that might arise. Third, there should be no banking for Ontario Hydro.

Concerns around the banking provision in the Hydro regulation have received the greatest attention and comment in these hearings and, accordingly, we will deal with this issue first.

We believe banking is inappropriate for the following reasons: banking permits variations in Ontario Hydro's emissions which are potentially damaging to Ontario and neighbouring jurisdictions. There are no environmental or human health criteria in the Ontario Hydro regulation which limit the extent to which Hydro's emissions can exceed the Countdown Acid Rain target. To add to that, we have never seen one iota of evidence to indicate that there is no

environmental or human health damage potential there, from excess emissions produced either by Hydro or any other official source.

Banking provides a precedent which any future acid gas program in the United States could emulate. The negative consequences for Ontario of the US following this lead could be much greater than the impact of the implementation of banking by Ontario Hydro. We will discuss in a minute the degree to which everything that we are doing in Canada is being scrutinized by some of our key adversaries, and others, in the United States.

Banking provides a legal means of breaking the law. Banking thereby weakens Countdown Acid Rain by degrading the program's image and decreasing the program's potential international capacity to be used as leverage in persuading our American friends, in particular, to act. Countdown Acid Rain must not only be effective in controlling our emissions; it must appear to be effective.

Anyone who doubts that what we do in Canada is closely scrutinized by American legislators should read the letter from Representative John Dingell, chairman of the energy and commerce committee of the House of Representatives, to Messrs. Schultz, Herrington and Thomas, which is appended to this submission. While much of what Mr. Dingell says about Canadian controls is either incomplete or inaccurate, there can be no doubt that Canadian efforts will continue to receive such scrutiny.

To reiterate what Mr. Wegman mentioned yesterday about Mr. Dingell and the committee, that committee has complete jurisdictional oversight over environmental legislation in the House of Representatives, and in fact, between a quarter and third of all bills going through the House pass through Mr. Dingell's committee. He has enormous influence and power.

I would like also to add that if you refer to the letter, you will see that in several places in the letter, Mr. Dingell refers, among other things, to articles in the Toronto Star and presentations before the federal special committee on acid rain. In short, he and other US officials are very closely in touch with everything that is said and done here in Canada about acid rain.

Our concern about banking was shared by some of the witnesses who have appeared before you. Professor Dewees expressed discomfort with banking as a whole and was categorical in his rejection of the forward-averaging provision. Mr. Hanna agreed with us that banking is inappropriate.

Turning to Ontario Hydro's position on banking, the major argument in favour of banking was put forward by witnesses from Ontario Hydro. Hydro witnesses suggested that the elimination of the banking provision could cost \$500 million to \$1 billion.

Our question is, simply, where did these figures come from? Despite the fact that Hydro has based its argument for banking on these costs, it has provided no information on how the numbers were derived.

It appears that these figures are tied to an undocumented worst case. Hydro seems to have made the assumption that the utility will be forced to generate any anticipated shortfall in Ontario using existing coal-fired capacity. It is assumed, therefore, that Hydro would have to install scrubbers on uneconomical existing plants that would be utilized only in the case of unexpected emergencies. But it is far from clear that this would be necessary, let alone economically justifiable, even in a worst-case situation.

Why could Hydro not draw on purchases from outside the province, rather than depend upon outdated and inefficient coal facilities? What role could alternatives within the province, such as the Lennox generating station, play? A host of unanswered questions remain about these estimates, including:

What shortfalls in electrical generating capacity have been assumed and over what time frame?

What combination of events have been assumed which might create these shortfalls: what combination of low water levels, nuclear plant failures, anticipated and unanticipated load growth and so on?

What additional capital and operating cost expenditures have been assumed, for what plants and over what duration?

What do these additional plant expenditures relate to: what combination of low-sulphur coal conversion and additional scrubber expenditures, for example? What scrubber technology has been assumed? There are many kinds of scrubbers.

What Ontario-based generation alternatives were considered? What was assumed about the currently mothballed Lennox generating station, and alternatives which are less polluting?

What underlying assumptions have been made about the potential role for demand-side measures, such as energy conservation and load management, both for their impact on overall load growth and for emergency load management?

What has been assumed about arrangements with Quebec, Manitoba and other sources for the utilization of their excess capacity in case of emergency?

How are the cost figures expressed--in the cumulative, inflated "dollars of the day" terms Hydro used to come up with the \$5-billion cost estimate for its acid gas program, or in the present-value terms the Ministry of the Environment's review of Hydro's first progress report urged Hydro to employ?

Without documentation of the estimates and without substantiating material and answers to many of these questions, we can only consider the figures Hydro put forward to be purely speculative and therefore really irrelevant for the committee's consideration.

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Turning now to other testimony about banking: One witness from the Ministry of the Environment suggested that the Ontario Hydro banking provision had two significant precedents in the United States. He stated that, far from being a novelty, similar banking provisions were part of both the US federal Clean Air Act and Minnesota's acid deposition standard and control plan. Concerning Minnesota, he stated:

"Perhaps the closest comparison is in Minnesota, which does have a new acid rain control program, as distinct from the ambient air control program in the United States. It provides for an SO₂ limit based on a 12-month rolling average for two major power plants. Provision is also made for exceptional exceedences if the need can be demonstrated to the Minnesota pollution control agency, based on circumstances beyond the control of the utilities. It is the same basic notion."

We have examined the rules governing the implementation of the Minnesota acid deposition standard and control program. We can find no reference to either the rolling average or the provision for exceptional exceedences. We checked with an official of the Minnesota pollution control agency. He stated that a calendar annual amount, not a rolling average, is used in establishing the utilities' limits. The agency official also confirmed that there is no provision for exceptional exceedences in the rules for the Minnesota program. However, in hearings held concerning the program, the agency responded to questions from the utilities involved about the agency's stance on exceedences which are beyond utility control. The agency stated that it would consider not classifying certain exceedences as violations if they resulted from act of God occurrences, such as an earthquake rendering scrubbers ineffective, a volcanic eruption or what have you.

However, the officials said that in considering whether to classify such an exceedence as a violation, the agency would not automatically assume that the utility would need to use in-state generation capacity. The agency would examine a range of alternatives open to the utility to supply needed power, including power purchases from outside the state. Thus, the approach in Minnesota is not analogous to the Ontario Hydro banking scheme.

The Ontario Ministry of the Environment witness also suggested that a direct comparison could be made between banking permitted under the federal US Clean Air Act and Ontario's banking provision. He stated that the two are similar. This is incorrect. They are fundamentally different. Banking in the US does not permit exceedences of target limits. The Ontario Hydro banking provision does. This is precisely our concern with banking in the Ontario Hydro regulation. The comparison is invalid.

Therefore, some conclusions about banking: Reference to banking should be deleted from the Ontario Hydro regulation. Banking has received considerable attention in these hearings, and while we do believe that it is a very important issue, we think that other matters deserve serious scrutiny as well. Future changes to and enforcement of the program are both of concern to us.

I would like to move to a few comments about future changes to Countdown Acid Rain. The program should not be weakened in the future. The coalition is concerned that future governments may lack the resolve displayed by the current Ontario government. In order to ensure that future changes to the Countdown regulations receive adequate scrutiny, we recommend that any proposed change to the Countdown Acid Rain regulations be brought before a committee of the Ontario Legislature in advance of adoption. To guarantee that this takes place, each of the five regulations should have this provision written in.

Concerning the enforcement of Countdown Acid Rain, other witnesses have echoed our concern about future enforcement of the program. Countdown Acid Rain will be only as credible as its enforcement record. While it is not possible to guarantee in advance that the program will be enforced, we have made three recommendations which we believe will enhance the likelihood that the program's emission targets will be met.

Public hearings should be held on the final abatement plans submitted to the ministry. Successful enforcement of Countdown Acid Rain begins with the corporation's adoption of practical abatement plans which will achieve the desired reduction targets. Public review of both the plans and the ministry's proposed certificates of approval will provide added incentive for appropriate

decision-making. To ensure that this added check of public scrutiny is effective, both the alternative abatement options considered and the evaluation criteria used by the ministry in developing certificates of approval acceptable to the government would be examined.

At this point, because of the uncertainty on the nature and timing of the government's evaluation and approval of these plans and the role of the environmental assessment of Ontario Hydro's acid gas program, we are not clear on what procedures will best ensure this scrutiny. It is possible that the environmental assessment process will adequately deal with our concerns for public input into the evaluation of Ontario Hydro's program.

It may be that the most appropriate approach for assessing the other corporations' plans, apart from Hydro's, can be handled through public circulation of the corporations' reports, which is currently required, combined with active solicitation of views by the ministry and hearings on the proposed certificates of approval before the Environmental Assessment Board.

Alternatively, it may be that the best approach is to convene special hearings before the Environmental Assessment Board to consider all the plans, not just Ontario Hydro's. In the past, the Environmental Assessment Board has been assigned special tasks, such as this, by order in council. For example, the Commission on the Regulatory Control of Mobile PCB Destruction Facilities was struck from among the members of the board. The board also considered, about 10 years ago, the issue of lead pollution in Toronto on special instruction.

Our concern is that appropriate processes are implemented to ensure adequate public input. We urge the committee to formulate recommendations consistent with that end.

As to the question of independent public monitoring, the four regulated corporations should be regularly monitored by an independent body which would make quarterly, public reports on its findings.

We have noted that Mr. Hanna yesterday disagreed with this recommendation in his presentation to the committee. He recommended instead, on page 8 of his presentation, "that greater attention be given to ensuring an adequate sampling strategy is developed such that representative samples will be obtained."

While we agree that improved sampling accuracy is desirable, his suggestion does not deal with the issue of the credibility of who is doing the sampling. We believe that the involvement of an independent third party is necessary to ensure both the accuracy of the monitoring and public confidence in that accuracy.

Nonenforcement of Countdown Acid Rain in any of its aspects should result in public hearings. The enforcement performance of the government should be regularly reviewed. If nonenforcement is occurring, a hearings process should be triggered. We recommend that a public advisory body, such as the Environmental Assessment Advisory Committee, be charged with undertaking this review and report publicly to the minister when it believes hearings are warranted. The hearings could then be held before the Environmental Assessment Board, which would then report to the government.

Other witnesses have also discussed alternative approaches to encouraging compliance. The use of economic incentives was raised by Professor

Deweese, for example, and we believe that this is an interesting option which merits full consideration. However, we believe that the use of economic incentives raises important questions for the overall philosophy of regulation in Ontario. As such, it goes beyond the scope of the present hearings. We think this is a matter the committee may wish to consider in detail after it has reported on acid rain.

Thank you again for the opportunity of reiterating and adding to our views. We would be happy to answer questions that you might have.

Mr. South: I have mentioned this once before in your original presentation; I take a lot of exception to page 8, where you discuss "the credibility of who is doing the sampling." Unless someone has a charge that the Ministry of the Environment has not been credible in its sampling in any situation in the past, I do not think a statement like this should be made.

Mr. Perley: A couple of comments there. In formulating this part, we thought about a couple of previous situations. One is, in 1970, the fledgling Ministry of the Environment issued a control order on Inco requiring it to reduce its emissions to 750 tons a day by 1978. That order was subsequently amended and revoked and a new order put in place, so that 10 years later, in 1980, we had an order requiring Inco to get down from its current level of 3,600 tons a day to 1,950 tons a day by 1983. In other words, the limit that was originally imposed in 1970 to be met in 1978 was more than quadrupled in the interim and only 13 years later there was a limit imposed that was nearly three times the original limit.

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That is one incident, as well as the incidence of monitoring during the Inco shutdown some years ago when we received material showing, on the one hand, that the shutdown had no impact on acid deposition in Ontario, and on the other hand, some information showing it did have an impact.

The problem here is that we have had previous instances where either a target has been set and then grossly amended upwards or data put out, whether it has been different data subsequently available, that show a different result. For that reason, on this particular issue, we feel it is really important to do that.

Mr. South: I take the inference from this that what you are discussing is the credibility of the people who are actually going out and doing the sampling or the people who are analysing the samples. The staff cannot be faulted for the direction that is given to them by their political masters of the day. I think there should be a differentiation in all of our minds as to who made the decision about adjusting the control order at Sudbury.

As I say, to me there is an inference there that the technical staff itself cannot be trusted. Maybe I am reading too much into this, but that is the inference I get. I do not think there is any instance when the staff of the Ministry of the Environment has been proven to have altered, adjusted or falsified information. As I say, that is the inference I get from that. I feel very strongly about that. I would like to go on record as one member of this committee, that I would never accept a statement like that or any inference that there was any doubt about the integrity of the staff of the ministry.

Ms. Hurley: May I just make a comment? Mr. South, actually in re-reading this as you have raised it now, I quite agree with you that

inference is there. It is not meant to besmirk the integrity of the technical people at the ministry. You are quite right, we have obviously indicated that here. What we were looking for here, to make this straight for the record, is a sort of net that would prevent some of those vagaries of political decisions from happening that Mr. Perley just outlined.

Mr. South: I think that can be done in spelling out the type of sampling that should be done, the frequency and those kinds of things. Those kinds of things then can be reviewed by any other disinterested third party or whatever.

Ms. Hurley: I think you are right.

Mr. South: Yes, if you change the inference that way, I would be happy with it.

Ms. Hurley: We would be pleased to do that.

Mr. Eves: Mr. Perley, I note and I agree with the coalition's approach with respect to the banking. It has been suggested to the committee by several witnesses that perhaps another method of dealing with this problem would be by a system of trading emissions. I just wonder what your thoughts are on that suggestion.

Mr. Perley: The reason emissions trading, the so-called "bubble concept," is allowed in the United States is that in the regions where it is normally considered under state implementation plans you have a large number of sources concentrated into a relatively small area. Therefore, if one plant reduces 25,000 tons extra and another plant emits 25,000 tons more, it does not make that much difference to the impact the emissions might have because you have a much higher volume of emissions jammed into a denser area.

Here we do not have that. We have perhaps half a dozen large sources located in various places throughout the province, and for Ontario Hydro to trade emissions with Inco Ltd., given where they are both located and given the potential environmental and public health impacts that emissions from one could have--we know about Inco--it just does not seem to us environmentally appropriate or appropriate from a public health standpoint that they be allowed to trade back and forth.

What that also does is encourage--in this case, I think it would encourage--the avoidance of the use of continuous emission reduction technology, continuous process technology, because it gives them another possibility of avoiding tackling the actual long-term emission reduction question, which we are all looking at. It allows them, not an "out" exactly, but it allows them an approach which they might infer could allow them to avoid the use of continuous process technology, and we do not want that.

Mr. Eves: Another point I wanted to raise with you is the fact that Hydro is not expected or required to report to the Ministry of the Environment until the end of 1988 with respect to its long-term plan. We have had several witnesses appear before the committee indicating that the technology is in place now, that Hydro could make a decision now, and the two most common solutions have been either using low-sulphur coal or by the implementation of scrubbers. Those have been the two most widely discussed by witnesses before the committee.

I want to know what the coalition's feeling is with respect to this time

frame. Are you satisfied that Hydro needs until the end of 1988 to make this decision and could it or could it not get on with the job now, cleaning up its act?

Mr. Perley: I think that is a good point, because not only are there those two technologies which are, as you say, the most widely used and widely discussed, but there is also a variety of other things, notably coal washing, which is employed to some extent by Hydro, I gather, but probably could be used more, and which is cheap.

There is also the possibility of buying power from other jurisdictions. We do not have any information on what discussions Hydro has had with other jurisdictions to prepare for this kind of possible purchase. Conservation measures are also a possibility that could be moved ahead with quicker, rather than slower.

In short, it seems to us they have so many options at their disposal that it should be possible to move faster than the end of 1988. That, in turn, is why it is so important that this decision regarding banking be made in the very near future, so that they know very clearly where they are at.

Ms. Hurley: Yes, it is probably instructive to think back to the time when General Public Utilities Corp. in New Jersey wanted to purchase energy from Ontario Hydro to make up for the loss of power that occurred as a result of Three Mile Island.

Do you remember how quickly we--Ontario Hydro, since we own it--were able to figure out how to build that cable under Lake Erie to supply that, and also put together a very thorough presentation to the National Energy Board.

It is my recollection that those things occurred in a matter of months. I am not really clear as to why Ontario Hydro was permitted to have until the end of 1988 on this but I think, based on experience and on recollection of any number of incidents over the years, it is a huge utility and is capable of assembling this kind of information, depending upon the political will, of course.

Mr. Haggerty: Just on that point, I have a supplementary. When I caught your eye there, that was the matter I was going to raise. Back in the early 1970s, Hydro proposed that cable across Nanticoke to Pennsylvania on the other side. Looking at it on the Hydro select committee dealing with that particular matter back then, it implied that the technology was there to put in the scrubbers--everything. Of course, there was a price tag to it, I think it was around \$900 million or something, but it could do it, for the export of that energy to the United States. I believe Hydro has the engineering capacity and the technology there if it wants to apply it; the question is when.

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Mrs. Marland: Mr. Perley, just to start where you finished about the coal-washing alternative, I think we heard a number of times that coal washing necessitated other modifications to the boilers because of the added moisture, so there was another cost. Although there were some savings in one aspect because the coal was washed, there was also an added cost because they then had to deal with the added moisture of what went into the boilers, and that necessitated some kind of modification.

Mr. Perley: I am certainly aware of boiler modifications depending

on the sulphur content of the coal and the type of coal. I have never heard of there being any kind of significant cost or problem associated with extra moisture as a result of washing.

Mrs. Marland: I think somebody referred to that. Did you not hear it? It may have been something we heard on our tour of the Lakeview generating plant. Certainly, it was an aspect that came up.

To get back to the banking, because I think the banking is going to be the focus of this committee in its recommendation--at least I hope it will be, because I have learned a great deal about what that involves and I had no anticipation before the hearings about to what extent it seemed totally ridiculous--in your presentation, you referred to some of the comments that have been made in the US about what that banking provision does to the credibility of our whole argument in asking them to do their share and so forth. I wonder if you could elaborate a little more on that aspect, about where that gives everybody south of the border a big loophole.

Mr. Perley: One thing we wanted to note in that regard is that if you look at this letter from Mr. Dingell--it is at the back of our presentation, appended to the presentation--you will see that on page 2 towards the bottom, the last large paragraph, concerning the Countdown Acid Rain program, he says: "I understand that these four firms"--the ones regulated under Countdown Acid Rain--"recently filed reports with the Ontario government that, according to the February 12, 1987, edition of the Toronto Star, claim they are on 'target,'" and then he goes on to quote the article.

That article appeared in the Toronto Star considerably before the question of banking was raised, which was also the subject of articles in the Toronto Star and, I think, the Globe and Mail. What that says to us is that Mr. Dingell certainly has all the material that has been written recently on any significant aspect of the acid rain issue in his coffers somewhere in Washington and he will be quite happy to use this at some point when he feels it is appropriate.

In this letter, he has gone after Inco and the general articles about the Ontario program. He has also referred to the New Brunswick and Nova Scotia situations. For some period earlier this year, those two provinces were unwilling, apparently, to meet the Canadian program. So we are absolutely certain he is going to use this material at some point; he just has not chosen to use it yet. He has material on acid rain which predates the banking issue being publicized, and he will use it some time.

Ms. Hurley: The point here is that on page 3, when he talks about the February 12 Toronto Star article referring to the Nova Scotia situation, we know we were in here on March 5 and that there were stories in the press and media about the banking problem just a month later. We also know that these New Brunswick and Nova Scotia stories took place after we were in here. The banking stories are conspicuously absent in this letter.

Mr. Perley: We are also looking at how this kind of banking possibility in the Canadian regulation might be used against us in the context of a major campaign of the Edison Electric Institute, which is the major American utility trade association. Their major campaign this year is against acid rain legislation and they are, as never before, making reference to American control efforts, or what they call the lack thereof, in the material they are circulating to members of Congress. One of their main items is that Canada has no scrubbers, that we do not use scrubbers.

Whatever one may think of that argument, and there is a lot to be said against it, the point is that the utility trade association, with a very large budget behind it, is going to use this material and push it in meetings with members of Congress. So the less opportunity they have to point to legitimate questions and loopholes in our regulations, the better for all of us. They are going to use a lot of semi-bogus scientific arguments as it is. We certainly do not need them to have this kind of material at all. It could be very detrimental to the push for controls in the US, which, if we do not get them, obviously impacts us seriously here.

Mrs. Marland: Would the members of Congress not view the utility trade association the same way as they would any self-interest lobby group?

Ms. Hurley: Yes.

Mrs. Marland: Do you not have to give some credit to the members of Congress?

Mr. Perley: Yes, sure.

Ms. Hurley: Obviously you do, and it is important for all of us in this room to try to think for a moment as if we were a senator or congressman from West Virginia or Illinois. While we are thinking about that, imagine what it would be like to have a new group in Washington called Citizens for Sensible Controls on Acid Rain start up. It is an industry group, by the way. They have over \$1 million in their coffers that we know of.

If you were a member of the House committee on energy and commerce, and any time a bill was going through this committee, they have the kind of money to take lists of your constituents in your riding and mail out to those people that you are going to do something that is going to increase utility rates, but not for acid rain controls. They will not put it in that light. They will put it in order to help some people far away up in New England or across the border in Canada where they do not even clean up anyway and where they are having their own problems with their own domestic program. A vote from any of you on that kind of legislation could cost you your district next time around.

We know that a well-heeled lobby group with that kind of a name, Citizens for Sensible Controls on Acid Rain, has an office today on Connecticut Avenue in Washington and has assembled quite a war chest.

None of the people who wrote the letters--who were contacted by the Washington Post, because the Post sent out an investigative journalist to look into the story--had ever taken out a membership in any of this. They were confused when they were told what this lobby was all about and what it meant. Had they known, they would not have written the letter they wrote. As you can see, what we heard was that they were able to drop--I cannot recall the figure, but it is in the Post article--just a prodigious amount of mail on the desks of the 42 members of the House committee on energy and commerce; enough to certainly make anyone who was a neutral back off very quickly.

Mr. Perley: Yes. The funding, in part, came from member associations of the Edison Electric Institute. The utility associations themselves are some of the largest contributors to political action committees of any industrial group in the US. There is a very considerable influence exerted by them, and whether on rational analysis some of their material seems slightly off base or not is only part of the point.

They have a large war chest, as Adele said, and can use it in a variety of ways, both overtly on behalf of themselves using their own names, and then creating these organizations over on the left or the right that appear to be something they are not at all.

Ms. Hurley: As if that is not really enough, let me just layer in one other thing here. As well now, imagine what it would be like to be a member of Congress from a district in the US where the utility that supplies power to your constituents is privately owned. That utility can send out with its monthly utility bills notices about how you have been voting or things you have been saying that would cause increases in utility rates.

In other words, member Marland from 13th district, Illinois, is supporting legislation that would clean up something called acid rain for which we do not even have enough information, etc. We could not try to get that kind of information out through those mailings. It would be impossible to try to duplicate the effectiveness of that kind of communication strategy on the part of a privately owned utility. So American Electric Power does this on a pretty regular basis. Here in Ontario, where we are publicly owned, we consider we are pretty fortunate in that we can spread the costs of the cleanup over the entire population of Ontario. We are cognizant of the fact that they have troubles in the United States cleaning up a privately owned utility. It is a lot tougher. You have a smaller base to increase the rates over, and in fact they often have to go out and seek permission to float a bond.

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Mr. Perley: Plus, for rate increases, they have to go to an elected public utilities commission which is very different.

Interjection: Have public hearings.

Mr. Perley: A public hearing.

Mrs. Marland: Ms. Hurley, I think you were here the first day Mr. Campbell was here when we were talking about the costs of the alternatives for Ontario Hydro. That day, I said to him that I recognize the board is a public body and is trying responsibly to serve the interests of the public, and in so doing, it now is at a crossroads. There is a demand to provide the service, but there is also a clamp on it, whichever direction it goes, to provide that service, whether it is fossil fuel generation or nuclear generation. It is in a no-win situation. I said that I thought it was perhaps time they turned it over and asked the public what it wants and let the public assume the responsibility they can no longer carry. Wherever they went, they met a wall. Why would they not use the vehicle of the local utilities to do a mailing with their billing, asking the public once and for all whether it would be willing to accept the added costs? Therefore, it would not be members of this committee who made a recommendation saying, "We are going to increase the utility rates by five per cent to have an environment to pass on to our great grandchildren." I was surprised when he said they had never thought of doing that. He said he would discuss it with the board.

I notice in here on page 3 you question where Hydro got the figures from for the costs of the alternatives. I wonder whether you would care to comment on the suggestion. You are questioning the costs. I am talking about whatever the costs are, ask the public whether it is willing to pay. At least give us, the public, the option of deciding whether we want an environment, whether we

want to be able to look back 100 years from now and see that we have done something to protect the environment. I am sure if the people in parts of Egypt and Jordan were ever asked now if they would rather have the trees that were cut down to fire the railways that used to go across their lands and then they ended up with a desert because of that--with the knowledge we have today, which is different from the example I just gave, we have an obligation to use that knowledge. I think what is happening in Hydro's position is that it is not willing to use the knowledge that exists and then ask the public what it is willing to bear.

Mr. Perley: I think you have a really excellent point. Part of the reason I think that is because there is an interesting precedent to encourage the kind of thing you asked Mr. Campbell to do. One of the precedents is a poll we did in March 1984. We asked the Canadian Gallup poll to include a few questions on its national omnibus that it does every month about who would be willing to bear the cost of acid rain and how much would they be willing to bear.

One of our questions was, "Would you be willing to pay \$5 a month, \$10 a month, \$15 a month or more than \$15 a month for acid rain cleanup?" I cannot quote you chapter and verse on the percentages of the result we got, but what I can say is that if you extrapolated the results we got from this poll to the general population and everybody actually sent in their money, we would have generated \$900 million for acid rain cleanup. That is a national survey, but a very substantial chunk of that money would be from Ontario because Ontario has the lion's share of the respondents on the poll; eight million people.

Ms. Hurley: It was broken out by province, so you could check Ontario.

Mr. Perley: Yes, I would guess that you would get at least \$300 million just on that kind of question alone. We are not talking, under any circumstances, of anybody being asked to pay \$15 a month.

Ms. Hurley: Having taken this, we think that this answers directly what you are asking. Ontario Hydro can go out and do that kind of poll.

Mr. Perley: Easily.

Ms. Hurley: In fact, I wish it would.

Mr. Perley: And cheaply, too.

Ms. Hurley: But in fact we have done it or Gallup did it for us in 1984. We are willing to say for the record that this was three years ago, and rather than worrying about that figure having gone soft in the meantime, it would be firm; we would be pretty sure it has gone up.

Mrs. Marland: Because of the heightened level of awareness.

Ms. Hurley: Exactly. That was before we had a lot of the health-based data we have now. It was before the amount of press and media we have had on the forest ecosystems and maple dieback. That is where the public in Ontario stood three years ago on ability or willingness to pay.

Mr. D. W. Smith: Was that for one year that you would raise that much money?

Mr. Perley: That was an annual amount. In fact, if you look at a five per cent increase, which Hydro has mentioned in association with its current cleanup plans, that is much less than \$5 a month, even.

Ms. Hurley: Mr. Chairman, do I have two minutes to--

The Vice-Chairman: Yes.

Ms. Hurley: I do not want to take up some member's time.

It raises today an important issue that is really critical for this committee at this point in the history of this province and with this utility and these kinds of issues. How can an all-party committee of a provincial Legislature try to make good policy on an issue such as this that seems to affect so many people in this province? There are certain issues you look at that affect a certain stratum of the population, but acid rain is the concern of everybody in this province. Whether it is fish, wildlife, environmentalism, the tourism industry, health; people representing those have all come forward. I cannot think of anyone who is not affected.

You then try to make significant policy decisions out of that when you are being told by a big corporation, one of the largest, about numbers such as \$5 billion, for which you do not have any substantiation. You do not have the equations. You do not have the numbers to look at. You just have the basics. It would be like trying to calculate your mortgage without knowing what percentage interest rate you are paying on it over five, 10 or 15 years. As you try to make those decisions, you have groups such as us come in and give you figures as best we can calculate them.

What we are getting at here is that under the parliamentary system, either we can continue this way or we are going to have to get to a point where these kinds of committees, which are really conducting oversight hearings on a regulation that was put forward a couple of years ago, are going to need some sort of ability to subpoena or get these kinds of data.

I am not saying it is not worth the money, but goodness, this is costing us all a lot of money and time; your time and our time and that of the public and the press and media. This is our second time before you. This issue has been before this committee for a couple of months now and we do not have the basic data on the Ontario Hydro figures here that we are trying to use to calculate the policy on how to change or modify this regulation.

Mr. Perley: Not only do we not have the basic data from Hydro substantiating these general statements it makes, but we also do not have any mechanism set up where an independent consultant or a third party who has no vested interest in it can take those data and review them in any substantial way to say: "They are in the ball park. They are out of the ball park. Here is what it should be doing. It is doing the right thing." We really have no mechanisms at all for that and no information base.

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The Vice-Chairman: Mr. Smith had a supplementary.

Mr. D. W. Smith: It is not really a supplementary. It is a short question.

The Vice-Chairman: Mrs. Grier.

Mrs. Grier: Mine follows from what you said.

Mrs. Grier: Mine follows only from what was said. I assume that when Hydro made its case to the ministry to justify banking, it must have submitted some of that data to the ministry. Why else do you think we have banking in the regulation?

Ms. Hurley: I do not know what we can assume here.

Mrs. Grier: Do you mean that you think the ministry just put in the banking without having any justification as to why it was there?

Ms. Hurley: I think that is a question that should be answered either when Mr. Bradley is here or if the Ministry of Energy is brought forward. We have been talking here for days. The ministry that should be regulating this crown corporation is the Ministry of Energy and I do not even think its name comes up. That says something to all of us. It bespeaks a great deal is what I am trying to say.

Mrs. Grier: Some of us went through that on the select committee on energy and I am not sure whether we want to get back into the regulation of Ontario Hydro again.

One of the thing that disturbed me in your presentation today was the testimony about the information we were given from the ministry on the Minnesota situation.

Mr. Perley: It disturbed us at the time.

Ms. Hurley: Very poor.

Mrs. Grier: Is there something similar in some other states that would have accounted for us being given that kind of evidence?

Ms. Hurley: Even if there was, it was very clear in the testimony that the state cited was Minnesota. We specifically checked Minnesota. The information you were given was inaccurate.

Mr. Perley: Right. We also had one of our people in Washington look at the Clean Air Act. There is an emission trading that Mr. Eves mentioned earlier, the emission trading of the so-called bubble concept that can be applied to a region with a large number of sources. If one goes below the regulated limit, another can go above and they can trade back and forth, but in no case is there provision for exceedence of a target. To the extent that was suggested by anything that was said by that official from the Ministry of the Environment, it is totally inaccurate.

Mrs. Grier: You are suggesting that we eliminate the banking and I, as I think I have indicated publicly, agree with that. It has been suggested to us that if the committee does recommend that we eliminate the banking provision, perhaps it ought to build into its recommendation some process by which, in the event of an emergency or an unusual occurrence, a procedure is laid down that Hydro would have to follow if it wanted to exceed the limits.

Can you comment on the effect of that and particularly on the implications of doing that vis-à-vis the attitude in the United States? Are we

just substituting one loophole for another if we do something such as that?

Mr. Perley: We have discussed that at great length and it is a difficult question. What we have recommended is a situation where there no banking is allowed, but where Hydro, if it ever does come to the ministry to apply for an exceedence, has to file written reports. We have a number of thoughts on how those written reports might be scrutinized and the kind of decision that would have to be made.

For example, if there were a report from Hydro requesting an exceedence, we would want to be absolutely sure that the substantiating evidence given by Hydro, as well as the reasons for a decision by the cabinet, was made public and was thoroughly reviewed, presumably by the Environmental Assessment Board. There are two or three process possibilities there but the bottom line is that none of that should ever happen in secret. There should be full and fair public scrutiny and the criteria used for approval should be that Hydro be required to prove conclusively that there would be no detrimental, environmental or public health impact of any exceedence that was being applied for.

With those kinds of process questions, I agree that this can be looked at. One person mentioned to me, I remember at the time, sort of inferring that banking is allowed. We are not inferring anything of the kind. We are simply saying that if we assume that at some point Hydro may come to require an exceedence, we had better make very sure that there is no way the demand or request for an exceedence is not thoroughly reviewed and that the strictest criteria as to what the impact of such an exceedence might be would be used in evaluating whether it should be given.

I hope I am not being too complicated.

Mrs. Grier: No. The difficulty I have always had in wrestling with that is that if you accept the submission Hydro made to us that the only reason it could possibly need an exceedence was some totally unforeseen emergency--I suggested a meltdown of Bruce, but they did not like that idea, but something similar. Presumably, you are not going to have the time to go through the kind of procedure you and I would like to see if that is, in fact, the case. How do we reconcile that?

Mr. Perley: I do not buy that. There are a couple of options I have seen mentioned from time to time, not necessarily in the context of these hearings, that might create one of these so-called unforeseen circumstances. One is something similar to the retubing of Pickering, but that does not happen overnight. The need for that does not arise from one day to the next. There is also the idea that drought may cause low water levels in some of the reservoirs and reduce the hydroelectric capacity, but that does not happen overnight either.

We have time to put, at a minimum, a fast-track procedure in place for evaluating that and making sure there are no other possibilities that Hydro can use short of going for an exceedence. That is why we raised the questions in our presentation about what arrangements have been made or are contemplated to be made between Hydro and other jurisdictions to arrange for potential sales or imports of power. They have mentioned that they have bought power before or that it is part of their control mix. That kind of thing, as well as other measures beyond scrubbers, should definitely be looked at as a means of offsetting the need for coal-fired generation, and can be looked at in advance.

Mrs. Grier: In your section on enforcement, you give us a number of options about public input. Do you have a preference?

Mr. Perley: I think at this point we do not, given that, as we mention, it is not exactly what will happen in terms of the final approval of the December 31, 1988, submissions. The process for that has not been laid out.

We do not have a preference. Our main concern is the principle that is a thorough public review of the reasons why a given plan is approved or not approved and, beyond that, some kind of review of the conditions of approval in the certificate of approval that would be granted, presumably, to each corporation. As long as that is thoroughly publicly reviewed and the reasons for any decision given publicly, with plenty of notice to parties, however you do it, as long as those principles are involved, it could be done two or three ways.

Mrs. Grier: I wanted to ask a question on the Dingell letter, which is fascinating reading.

Mr. Perley: Interesting reading, yes.

Mrs. Grier: I am glad to have it. Is the underlining his or yours?

Mr. Perley: It is his. Everything is his.

Mrs. Grier: On page 8 of the letter, he is talking about Inco in the second-last paragraph. I wondered if you could comment or perhaps explain what led him to that. Is he right, or if he is not right, what is he saying wrong?

Mr. Perley: Inco shuts down for, I think, a month every summer to refurbish and tidy up and do various maintenance. His claim is that they routinely use that month-long shutdown, because they have an annual emission limit, to help average. They emit more during the months they are operating, because they know they have a month where they can average in zero emissions, which will help bring down their total and allow them to meet the annual limit.

The point is that so do all the US smelters. Every smelter does that. Our understanding is that they have to do it.

As far as continuous emission reduction technology is concerned, there is not an overt requirement in the regulation, but on the other hand, Inco has had sulphuric acid manufacturing plants in operation for years and years, and you could look at that as a continuous process emission reduction technology. Inco would probably argue that it is. I think they it would argue that if they did not have to reduce their pollution, they would not be using those plants.

Ms. Hurley: We also want to be very clear and say the inclusion of the letter here is not because we necessarily agree with what Mr. Dingell says about the Canadian program. He has his own vested interests and he is interpreting this in his own way. Obviously, it is there to show the extent to which the scrutiny exists, and sometimes he is right. There is no question; sometimes he is right, he is dead on. A lot of the time, however, it is very self-serving, or he has the story but he has a quarter of the story.

Mrs. Grier: It is a very interesting example of how any slight weakness is going to be exploited and, therefore, we have to be squeaky clean and not allow loopholes to be there that can be exploited.

Mr. Perley: He does not mention in this letter the fact that, for example, until 1988, Canada will have had auto emission standards for nitrogen oxides which are three times as weak as those in place in the US. He does not mention banking. He does not mention previous lack of regulation of Hydro. He does not mention a lot of things that have been used previously or are likely to be used in the future.

Mrs. Grier: Will the response to this letter be made public at any point, do you think?

Mr. Perley: I am sure we will see it at some point.

Mrs. Grier: Eventually.

Ms. Hurley: Our fear is that there could be an oversight hearing in the US on the Canadian program.

Mrs. Grier: Under what authority?

Ms. Hurley: Mr. Dingell's.

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Mr. Perley: It is possible. Actually, section 115 of the US Clean Air Act has been the subject of litigation in the last couple of years, unsuccessful so far. Some groups have sued the Environmental Protection Agency on the basis that they feel there is evidence to indicate that sources in the US are damaging Canada. This section allows for reductions to be required in the United States from US sources based on damage in a foreign country. If that litigation proceeds, it is quite conceivable that Mr. Dingell would call for a hearing to investigate whether Canada's program really is reciprocal with efforts in the US, which is a condition of the statute.

Ms. Hurley: Or, as well, whether the Canadian program has the kind of integrity that Canadians say it has. There are many charges that the Canadian program is a mask or a disguise for what is currently known as the Canadian conspiracy theory, which says we are pushing this acid rain issue up here only because we want them to have to clean up and thereby have to purchase more electricity from Canada. We would get to sell them more.

Mr. Perley: Which would encourage our nuclear industry.

Ms. Hurley: There is a lot of fodder there for an oversight hearing.

The Vice-Chairman: Mr. Smith, do you have a short question? We want to keep in mind the time. Some people want to leave, and we want to go in camera for a few minutes.

Mr. D. W. Smith: I will not take too much time. My question is along the same line as some of the questions that have been asked concerning the Dingell letter. On page 3, do you agree with that statement that Algoma Steel is only using its standards because of reduced operation, or do you really believe it is making a concerted effort to reduce its emissions through other means?

Mr. Perley: They do not have continuous emission reduction technology installed. They are now meeting their limits because their production is way down. By December 31, 1988, they have to submit, as do the

other sources, a plan that will indicate how they are going to control their emissions if they ever do go back up to full production. So far, we have not seen that plan.

Mr. D. W. Smith: So you really do not think they have done an awful lot to correct the emissions.

Mr. Perley: In fact, they have not. They have not installed process technology simply to reduce emissions. We will have to wait until the end of December 1988, to see what plan they have to take that kind of action if they do return to full capacity.

Mr. D. W. Smith: Okay. I asked this question yesterday of Mr. Wegman, I think it was, on the agreement with Mexico. How tough do you think they are going to be with Mexico? To me, there is a little bit of a reverse reaction here with Canada and the US and the US and Mexico. Do you feel the United States is really going to be tough on Mexico? If so, can we really be tough on the US, if it is that tough on its neighbour?

Mr. Perley: The interesting thing there is that if I had to bet, I would say they will be as tough as need be. There will not be any backing off, because the Mexican Nokazari smelter, which is the main focus of attention from the US side, started up this past year without any pollution controls on it at all.

First, Governor Babbitt of Arizona was very preoccupied by this, because Arizona is a famous clean air area in the United States and he did not want contamination of his state. There were also a number of environmentalists who worked very hard on this. In short, there is a good monitoring watchdog group there to watch over this. Second, Arizona is going to be very tough, as is the regional EPA office.

Third, we do not have any doubt that the emission control technology is going to be installed at Nokazari, because the technology that has been arranged for it is going to be built by Fenco engineering of Toronto and is going to be financed through a loan from the Export Development Corp. I think we can assume that the Canadian contribution will help to ensure that it goes ahead.

Mr. Charlton: Could we just go back to the Inco thing for a moment? We do not disagree with it to this point. With the exception of production cuts, Inco has done nothing in terms of process technology. I think it is also fair to state, just so the committee understands fully, that there is no way Inco will be able to get to the limits of 1994 without installing technologies or shutting down, one or the other.

Mr. Perley: They have done two things which do amount to process technology.

First is the installation of the sulphuric acid manufacturing plant, which was their initial big chunk of emission reduction. I think you can call that a process technology. It is a revenue producer and not strictly a pollution control technology, but it was largely put there because of that.

Second is the pyrrhotite separation technology. That is a pollution control technology, and they are working--perhaps "desperately" is not too strong a word--to try to up the amount of sulphur they can get out of the ore through that technology in order to help them meet the 1994 limit.

Right now, they do not have a means, short of development of some kind of process technology, of getting to the 1994 limit. They have said repeatedly they are going to do it. They do not want any government money to do it, but how they are going to do it has not yet been defined. They are right in the middle of that at the moment.

The Vice-Chairman: If there are no further questions, I would like to thank you very much for your presentation and your excellent input to this committee.

We would like to go in camera now to discuss our strategy for putting the report together.

The committee continued in camera at 3:17 p.m.



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